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Islamic bank contribution to Indonesian economic growth

I. Introduction

Today, Islamic banking has been growing rapidly all over the world and exist in almost all parts of the world, and are looked upon as a viable alternative system which has many things to offer. In spite of initially developed to fulfill the Muslims need to financial system interest-free. Islamic banking is recognized as one of the fastest growing areas in banking and finance since the opening of the first Islamic bank in Egypt in 1963. The Islamic economy initiative is supported by the regional and global needs of more than 1.6 billion Muslims. The Islamic finance sector alone continues to grow with over US\$6.7 trillion predicted by 2020. The region has demonstrated dynamic leadership in Islamic finance with significant innovation. With ongoing changes in the global economy, individuals and institutions seeking alternative financial and ethical investments privatization and transformation programmes, Islamic finance has become an important part of our future. Furthermore, today over US\$260 billion is currently invested in Islamic funds and over 300 global Islamic institutions active around the world (S and P, 2017).

Since several decades, the Islamic financial sector has become one of the best choice for investors. Indonesian. Islamic banks (IIBs) assets and system are growing rapidly side-by-side with the conventional financial system. In 2017, The number of Islamic financial institutions increased from 1 in 1991 to 13 shariah business banks, 21 shariah business units and 167 shariah rural banks with 2,633 offices network. In line with the increase in the banking infrastructure, the Islamic banking industry provides job opportunities to more than 61,389 employees compared to about 45,818 in 2015. The Islamic banking industry has also staged impressive financial performance, as reflected by the high asset growth. Total assets of the Islamic banking system

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3 has grown remarkably from IDR 304 trillion in 2015 to IDR 395 trillion.
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5 In 1998 until now, Indonesian have been faced with relatively low level of economics
6 growth with just over 5 percent. Since then, the economy is not strong and developed enough to
7 support such a huge population and ultimately leading to increase the poverty level as the
8 unemployment rate reach more than 10 percent in recent years. This phenomenon have produced
9 many interpretations, debates and controversies among stakeholders over the IIBs role in regard
10 to performance comparison againts conventional banking. Major financial markets are
11 discovering solid evidence that Islamic finance has already been mainstreamed within the global
12 financial system – and that it has the potential to help address the challenges of ending extreme
13 poverty and boosting shared prosperity.
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27 Increasing presence of the Islamic banking and finance in Indonesia, it is indeed timely
28 to undertake an in-depth study on the relationship between the industries on Indonesia' economy.
29 Islamic Banking rapid growth have been the main factor of many investors increasing interest to
30 invest in the IBs industry and the contribution of the IBFIs to the overall economy significantly
31 increase. Information on the relevance and importance of the IBFIs in contributing toward the
32 country's growth process is highly sought after by the industry players and policy-makers to
33 chart out future direction for healthy growth of the industry.
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43 Some previous empirical researches find mixed conclusions related to the traditional
44 point of view of capital that savings boosts economic growth and/or the Keynesian point of view
45 that economic growth engenders savings by Narayan and Narayan (2006), Odhiambo (2009),
46 Kudaisi (2013) and Jouni (2016). However, empirical analyses on the impact of Islamic banks
47 financing development on long-run economic growth include by Seetanah *et al.*, (2009), Goaid
48 and Sassi (2010), Halkos and Trigoni (2010), Abduh and Omar (2012), Farahani and Dastan
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(2013), Grassa and Gazdar (2014), Hachica and Amar (2015), Daly *et al.*, (2016), Djennas (2016), Imam and Kpodar (2016), Kassim (2016), Lebdaoui and Wild (2016) and Zarrouk *et al.*, (2017).

This issue is of critical importance to economic development policy, which should tend toward appropriate strategies to promote economic growth and/or savings, depending on the direction of causality and its magnitude. These studies show the crucial role played by the financial sector when it is able to direct financial resources toward the sectors that demand those most. A developed financial sector promotes a better allocation of the financial resources into productive use and contributes positively to the economic growth.

In fact, the previous studies show that Islamic banking has not worked as an engine of economic development in Malaysian Furqani and Mulyany (2009), Hachica and Amar (2015), Turkey by Yuksel and Canoz (2017) and Zarrouk *et al.*, (2017) In UAE. How about Indonesian Islamic banks ?. Out of the extensive research carried out in this field, there are no sufficient works conducted within the Islamic financial framework. Our research extends previous evidence by investigating the Islamic finance growth relationship with economic growth.

This study has two contributions to the existing literature. First to our best knowledge, this paper is the first study that examines empirically the effect of Indonesian Islamic banks on economic growth measured by the amount of GDP, financing, offices and deposits. Second, the findings of this paper suggest that the need to accelerate the financial reforms for Islamic banks that have been launched in 1991 and to improve performance and market share to stimulate saving/financing and, consequently, long-term economic growth.

This paper consists of six sections. Section I discusses the introduction, in which the background and rationale of the study is outlined. Section II covers the review of literature, of

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3 the relationship between financial development and economic growth in the world as well as
4 relation with Islamic banks and economic growth. It also captures the background of Islamic
5 banking in Indonesia. Section III covers the detail of the data and research methodology
6 employed in this study. Section IV reports the findings and discussion. Section V outlines the
7 conclusion and last but not least, Section VI suggests directions for future research.
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15 **II. Literature review**

16 **II.1 Economic developed and Financial growth**

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18 Many researches attempted to analysis empirically by exploring specific indicators to
19 explain the causal relationship between financial development and economic growth have
20 carried out in this field, there are at least three types of causal relationships between financial
21 development and economic growth that have been found, (1) financial development is a
22 determinant of economic growth supply-leading; (2) financial development follows economic
23 growth demand-following; and (3) bidirectional causality between finance and growth.
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34 The empirical test results are mixed and the causality patterns appear to be diverse.
35 McKinnon (1974), Jung (1986), Furqani and Mulyany (2009), Seetanah *et al.*, (2009), Halkos
36 and Trigoni (2010), Hassan *et al.*, (2011), Hachica and Amar (2015), Daly *et al.*, (2016),
37 Djennas (2016), Grassa and Gazdar (2014), Imam and Kpodar (2016), Kudaisi (2013) and Levy
38 (2016) argued that expansion of the financial system could have a positive repercussion on
39 economic growth. The financial sectors in this case act as supply leading' to transfer resources
40 from the traditional, low-growth sectors to the modern high-growth sectors and to promote and
41 stimulate an entrepreneurial response in these modern sectors (Patrick, 1966, 75).
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52 Referring to the importance of financial development for a country, study on causal
53 relationship between the development of financial intermediaries' activities and economic
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3 growth has been carried out extensively toward the development of financial systems lead to
4 economic growth. King and Levine (1993), Levine (2005), Levine *et al.*, (2009), Hassan *et al.*,
5 (2011) and Levy (2016) support this argument. On the other hand, other authors argue that the
6 direction is from economic growth to financial development. Since the economy is growing,
7 there is an increasing demand for financial services that induces an expansion in the financial
8 sector Hsueh *et al.*, (2013) and recently Uddin *et al.*, (2013).
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17 II.2 The Islamic finance-economic growth nexus

18 For the first time were introduced, Islamic banking has considered as an alternative
19 solution to conventional banking system and has grown rapidly both in Muslim and non-Muslim
20 countries. Similar to their conventional counterparts, Islamic banks function as an intermediary
21 to channel funds from the saver sector to the deficit sector to promote activities in the economy.
22 The difference is that the financial instruments are interest free are consistent with the Shari'ah
23 Laws which are based on the Quran and the Sunnah.
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33 On the other hand, Islamic banks help to promote economic activities in two ways; First,
34 they offer capital venture in the production process by contributing to the companies capital. The
35 effect of the contribution to financial resources according to the production requirement to be
36 more efficient as compared to pure lending. This therefore is expected to have a more positive
37 impact on economic growth. Islamic banks are also believed to bring advantages to the financial
38 and economic systems in the following ways. Second the selfish behavior of the entrepreneur
39 that leads to agency cost and conflicts of interest between in conventional finance is not likely to
40 exist in an Islamic based lending due to the use of musharaka and mudharaba.
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51 Naguoka (2011) explore theoretical studies about potentialities of Islamic finance to
52 contribute to economic growth of modern economy and the Islamic world by compare the
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3 Islamic banks product to the conventional banks. Islamic finance is found to embed the monetary
4 sector into real sector. It proven that Islamic finance and the real economy will enable contribute
5 more effectively than conventional banks. Grassa and Gazdar (2014) conducted a comparative
6 study between Islamic and conventional banks in the case of GCC countries, and concluded that
7 the Islamic banks deposits and Islamic private credits are found to be relevant determinants of
8 economic growth and performed better compared to conventional banks.
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11 Hasan and Dridi (2010) have postulated that the integration of the Islamic legal
12 framework in finance and banking has enhanced the performance of the economic activity.
13 These authors, along with many others, such as Khoutem and Nedra (2012), Ali and Azmi
14 (2017), Boukhatem and Moussa (2017) and Khoutem and Nedra (2012) examined the
15 performance of both Interest-free and traditional banks during the financial crisis. They have
16 recommended the implementation and generalization of the Islamic finance principles. Indeed,
17 they have considered these principles as necessary for the sake of improving the contractual
18 equity and economic efficiency. While Islamic banking system was faced with a larger decline in
19 profitability because of the lack in risk management practices, it accumulated a higher growth in
20 assets and credit rating. This study corroborated the fact that Islamic banks fosters the economic
21 and financial stability Abduh *et al.*, (2011), Kayed and Hassan (2011), Abduh and Omar (2012),
22 Abd. Majid and Kassim (2015) and Kassim (2016).
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45 There are clear evidences of a significant relationship between the financial and real
46 sectors. Bank as a financial intermediaries play an important role in mobilizing savings and
47 capital, which increases the available pool of investable capital much needed by the production
48 side of the economy. In view of this, efforts to develop the financial sector are seen as in line
49 with the effort to increase the productive capacity in the economy by Furqani and Mulyany
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(2009), Abduh and Omar (2012), Farahani and Dastan (2013), Yusof and Bahlous (2013), Imam and Kpodar (2016), Kassim (2016) and Lebdaoui and Wild (2016).

Abduh *et al.* (2011), Abduh and Chowdhury (2012), Abduh and Omar (2012), Lebdaoui and Wild (2016), Mohammed and Muhammed (2017) and Kim *et al.*, (2018) have investigated the long-run relationship and the dynamic short-run interactions between the development of Islamic banking and the economic growth. They have used the cointegration methodology and the Granger causality tests. Their results suggest a significant bi-directional relationship in the short run and the long run between the Islamic bank financing and the economic growth.

To narrow the gap in the empirical literature Hassan *et al.* (2011), Farahani and Dastan (2013), Mohd. Yusof and Bahlous (2013), Imam and Kpodar (2016) and Lebdaoui and Wild (2016) have used the panel approach by studying the impact of the Islamic financial development on the economic growth, Other researchers find that Islamic banking enhances macroeconomic efficiency, although the effect reverses beyond a certain level of Islamic banking development Gheeraert and Weill (2015), Levy (2016) and Zarrouk *et al.* (2017)

Using cointegration and Granger causality tests, with regard to the role of Islamic financial development in economic growth, Furqani and Mulyany (2009) and Abd. Majid and Kassim (2015) are among the limited articles in this area. However, using not-so-different time span of quarterly data, their findings are different in terms of the direction of the relationship. Furqani and Mulyany (2009) on the one hand, posit that the relationship between Islamic financial development and economic growth is following the view of “demand-following” which means that economic growth causes Islamic banking institutions to change and develop. On the other hand, findings of Grassa and Gazdar (2014) and Imam and Kpodar (2016) are found that Islamic finance has started to make important contributions to the real economy by effectively

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3 carrying-out the financial intermediation role of pooling and channeling funds to the investment
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5 activities.
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8 In this respect, this paper provides an empirical evidence of the Islamic finance
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10 development's effect on the Indonesian economic growth. We have chosen to study the case of
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12 Indonesia for four reasons. First, since its independence, it is one of the first countries to have
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14 made efforts to reform its financial systems to integrate the Islamic finance in 1991. Second, the
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16 Indonesian financial system is a mixed system characterized by the simultaneous presence of
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18 Islamic and non-Islamic financial institutions. This allows us to obtain more indicators of the
19
20 Islamic financial development. Third, Indonesia is the country where the Islamic financial
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22 engineering is developed and supported by the biggest moslem population in the world. Finally,
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24 relative to other countries that have integrated Islamic finance, Indonesia is one of the few
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26 countries having a powerful system and significant of Islamic finance institution growth. This
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28 enables us to solve the problem of data unavailability characterizing the developing countries.
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33 In addition to the contribution mentioned in the introduction, our research adds to the
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35 literature in several ways: instead of linking financing, deposits and the amount of Islamic bank
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37 offices to the economic growth. Some of the papers published in this regard are either dealing
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39 with Malaysia case Furqani and Mulyany (2009), Abd. Majid and Kassim (2015); and Hachica
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41 and Amar (2015), Malaysia and Indonesia case Mohd. Yusof and Bahlous (2013), Indonesian
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43 Abduh and Omar (2012), Southeast Asian countries Lebdaoui and Wild (2016), the Middle east
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45 case Grassa and Gazdar (2014), MENA Kar *et al.*, (2011), OIC member countries Naceur *et al.*,
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47 (2015) and Ali and Azmi (2017) or rather use the total financing as proxy instead of the size or
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49 the presence as it is done in the present paper. However, our major goal is to assess how does
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51 Islamic bank influence the economic growth in Indonesia in the short- and long-run.
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II.3 Indonesian Islamic banking

Islamic banking and finance is experiencing a rapid growth worldwide. The International Monetary Fund (IMF) released a report which stated that Islamic banking is one of the fastest growing segments in the financial industry with a tracking of 10-15 percent growth over the past decade, and globally, Islamic banking assets are estimated to grow around 15 percent a year of \$1 trillion by 2016. In Indonesia, Islamic banking industry started 17 years ago, in 1992 with the establishment of the first Islamic bank in Jakarta, namely Bank Muamalat Indonesia (BMI). It remained the only Islamic commercial banking (BUS) until the financial crisis 1997, which caused massive destruction to the Indonesian financial system (Bank Muamalat Indonesia, 2016).

After the Islamic Banking Act No. 21 Year 2008 concerning Islamic banking legal foundations was passed by the House of Representatives of Indonesia, many conventional banks spin-off their Islamic windows to full-fledged Islamic bank and conversion of rural banks to Islamic rural banks which base their operation within the Islamic tenets. On the other hand, demand from Muslim customers in Indonesia is also pushing the industry to fulfill their needs in terms of banking transaction under shariah principles. Both sides of government regulation and demand from customers have encouraged Islamic banking in Indonesia to grow faster.

After the “1998 multi-dimensional crisis”, Indonesia is now transformed into one of the largest democratic and structurally different with what it was a decade ago. The extensive transformation in many aspects, including the rapid development of Islamic banking, has provided a more resilience foundation into the Indonesian economic development today. Focusing on the rapid development of Islamic banking in Indonesia, this paper is, therefore,

aimed at providing an empirical evidence of the contribution of Islamic banking towards Indonesian economy.

III. Data and research method

Because the study attempts to empirically explore the contribution of the Islamic banks to the Indonesian economic growth. In this paper we use quarterly time series data from 2005:Q1 until 2017:Q4 for the variables Islamic Bank total financing (TF) as a represent of financial sector and three variables representing real economic sector namely real GDP, the number of IIBs offices (IBO) and deposits (DEP). The data are gathered from the Indonesian central of bureau statistics (BPS) and quarterly Islamic statistical bulletin of bank Indonesia from financial services authority (OJK).

Table I

GDP is a common statistic to represent the income level of a particular country within a certain time range. Study about finance-growth nexus always use GDP as the principal variable reflecting economic growth. We use the number of offices, deposits, and financing as a representation of IBs performance, measure the development of Islamic financial intermediaries and as an economic indicators of the level of business activity during an accounting period. While total financing (TF) reflects the extent of Islamic financial intermediation, Thus, our models contain four variables, namely, GDP, TF, DEP and IBO, we focus on the following one model :

$$GDP = f(TF, DEP, IBO) \quad (1)$$

Where :

GDP = Real Gross Domestic product;

TF = Total Financing;
 DEP = Total Deposit;
 IBO = Islamic bank offices.

To provide empirical evidence of the long run integration between Islamic banking sector and economic growth and to see the dynamic causal link between Islamic finance and economic growth, we employ the vector error correction model (VECM) that can be written as follows :

$$\Delta GDP_t = \alpha_1 + \sum_{i=1}^k \beta_{1-i} \Delta GDP_{t-1} + \sum_{i=1}^k \theta_{1i} \Delta TF_{t-1} + \delta_1 \gamma_{t-1} + \varepsilon_t \quad (1)$$

$$\Delta TF_t = \alpha_1 + \sum_{i=1}^k \beta_{1-i} \Delta TF_{t-1} + \sum_{i=1}^k \theta_{1i} \Delta GDP_{t-1} + \delta_1 \gamma_{t-1} + \varepsilon_t \quad (2)$$

$$\Delta DEP_t = \alpha_1 + \sum_{i=1}^k \beta_{1-i} \Delta DEP_{t-1} + \sum_{i=1}^k \theta_{1i} \Delta TF_{t-1} + \delta_1 \gamma_{t-1} + \varepsilon_t \quad (3)$$

$$\Delta DEP_t = \alpha_1 + \sum_{i=1}^k \beta_{1-i} \Delta DEP_{t-1} + \sum_{i=1}^k \theta_{1i} \Delta TF_{t-1} + \delta_1 \gamma_{t-1} + \varepsilon_t \quad (4)$$

$$\Delta IBO_t = \alpha_1 + \sum_{i=1}^k \beta_{1-i} \Delta IBO_{t-1} + \sum_{i=1}^k \theta_{1i} \Delta TF_{t-1} + \delta_1 \gamma_{t-1} + \varepsilon_t \quad (5)$$

$$\Delta TF_t = \alpha_1 + \sum_{i=1}^k \beta_{1-i} \Delta TF_{t-1} + \sum_{i=1}^k \theta_{1i} \Delta IBO_{t-1} + \delta_1 \gamma_{t-1} + \varepsilon_t \quad (6)$$

Before we apply the Granger causality tests we have to test for stationarity of the time series into consideration to measure credible and robust results for the multivariate causality relationships among variables based on the Vector Error Correction model (VECM) model, the data to be analyzed should be stationary. For this purpose, the study conducts the stationarity tests, that is Augment Dickey-Fuller (ADF) and Philips-Perron (PP) by Schwarz info criterion.

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3 Small sample size study ranging from 30 to 80 observations, Narayan (2004) has
4 tabulated two sets of appropriate critical values. One set assumes all variables are $I(1)$ and
5 another assumes that they are all $I(0)$. This provides a bound covering all possible classifications
6 of the variables into $I(1)$ and $I(0)$ or even fractionally integrated. If the F-statistic exceeds upper
7 bound level, the H_0 is rejected, which indicates the existence of cointegration. On the other hand,
8 if the F-statistic falls below the bound level, the H_0 cannot be rejected, which supports that no
9 cointegration exists. The second step is to test for co-integration using the Johansen and
10 Juselius cointegration tests (JJ test). The presence of cointegration suggests that the variables;
11 Islamic bank financing, economic growth, offices and deposits possess a long-run relationship,
12 even though they may drift a part in short-run, and consequently, there must be at least one
13 direction of causation in the Granger sense, either unidirectional or bi-directional causality.
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28 Johansen and Juselius (1990) have developed two test statistics the trace test and
29 the maximal eigenvalue test- to determine the number of the cointegrating vectors. Before
30 applying JJ-cointegration tests, we need to determine the lag length k in VAR model. The JJ
31 results are very sensitive to the lag length chosen; therefore k should be high enough to ensure
32 the residuals are serially uncorrelated and normally distributed. But it should not be too high to
33 avoid the unbiased and inefficient estimation. However, if there is no cointegration of the
34 variables, it suggests that there is no evidence of a common trend in the movement of the two
35 variables. The last step is to run a standard Granger causality test augmented with an
36 appropriate error-correction derived from the long-run cointegrating relationship. As the null-
37 hypothesis of non-cointegration is rejected, then the variables are integrated of order 1, $I(1)$.
38 Following Engle and Granger (1987), to see the dynamic causal link between Islamic finance
39 and economic growth the error correction model (ECM) above have to be pursued.
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IV. Results and discussion

According to table III The lags for the unit root test are set to 2 as suggested by the Akaike Information Criteria, AIC. The lag length for the ADF tests was selected to ensure that the residuals are white noise. The ADF and PP Test show that all series are found to be non-stationary at levels and stationary at their first differences, that is all variables are integrated of the same order, i.e. $I(1)$, based on this result one can expect that these series may be co-integrated as well.

Table II

Table III provides the result of the Johansen-Juselius co-integration test that null hypotheses of non-cointegration are rejected at 1 percent level for GDP, deposits, offices and financing. The cointegration equations suggest that in the long run Islamic bank financing, offices and deposits contribute to increase economic growth by increasing her GDP. This test implies a long-run association between Islamic banking and economic growth that constitute GDP, financing, deposits, and offices. The Akaike Information Criteria (AIC) was used to select the optimum lag length of the level VAR system required in each case.

Table III

The Granger Causality tests for Islamic banking and economic growth is given in Table IV. The results provide the short-run and long-run causality of the variables. In the short-run, it is found that Islamic bank offices does not cause financing of Indonesia and vice versa. However, Islamic bank deposits contribute to economic growth through financing. But, there is a uni-directional causality between Islamic bank financing and economic growth since it is significant at 5 percent level. Thus, Islamic banking granger causes the development of real

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3 economic sector in Indonesia through increasing her financing and intermediary role through
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5 deposits.
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8 However, in the long-run, the results are very encouraging. The signs and significance
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10 levels of t-statistics of ECM for Islamic banking financing suggests that in the long-run there
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12 is not only a virtuous cycle but also as a development key of Islamic banking offices and
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14 deposits, as increase stimulates economic growth in the productive sectors and promotes more
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16 financing, at the same time, more financing in the country facilitates Islamic banking to develop
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18 further.
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22 In the case of GDP, this finding seems to support demand following hypothesis where
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24 financing and offices development follows economic growth. Here, Islamic bank financing as
25
26 dependent on the growth of GDP. Economic growth creates a demand for financial
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28 intermediation. Thus, Islamic financial institutions and services is a response to the demand
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30 from investors and savers in the economy. In this regard, economic growth causes Islamic
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32 banking institutions to change and develop. It can be concluded that in the short run Islamic
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34 banks to GDP directly seem to affect growth. This can be supported by the impulse responses
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36 and the variance decomposition analysis as shown in Figures 1 and 2.
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40 Table IV

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43 Impulse response functions show how one variable responds over time to a single
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45 innovation in itself or another variable. Innovations in the variables are represented by shocks in
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47 the error terms in the equations. Specifically, we observe that for instance, after a 1 per cent
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49 point increase in GDP, the responses of financing is negative, experience fluctuated for offices
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51 and positive for deposits. On the contrary, GDP, deposits and offices reacts positively to a 1 per
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cent shock of financing and offices, financing and offices, meaning that an improvement of GDP and financing stimulates

Table V

Figure 1

At the same time, we compute forecast error variance decomposition, which seems to reinforce the results of the impulse response functions, by determining the relative importance of each variable in generating fluctuations in other variables. According to Figure 2, the results show that financing, offices, and deposits are explained by 12 per cent of GDP fluctuations, while offices, deposits and GDP does seem to be important for financing. Also, GDP and financing are explained almost by 50 and 60 per cent by offices respectively.

Figure 2

However, according to the vector error correction estimates, the significance of the error correction coefficients implies that there is a relation between GDP, financing, deposits and offices in the long run (see Table V).

V. Conclusion

This paper finds evidence that in the long-run, Islamic bank financing and deposits are positively and significantly correlated with Indonesian economic growth. In this regard, Islamic banking has effectively played its main role as financial intermediaries that facilitate the transmission of savings or deposits. Furthermore, This finding also shows the reliability and contribution of Islamic banking to the real economic sectors of Indonesia specifically economic growth and financing. This result also indicates that improvement of the Islamic financial infrastructure in Indonesia may benefit economic development and it is important in the long run for economic welfare.

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3 In other words, Islamic banking has shown to be effective as financial intermediaries that
4 facilitate the transmission of funds from surplus households to deficit households. However,
5
6 unlike earlier studies, the relationship between Islamic financing and growth in Indonesia is bi-
7
8 directional indicating the development in Islamic banking stimulates growth and at the same
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10 time, growth propels Islamic banking development in Indonesia.
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15 The relationship between financial development and economic growth is
16 investigated for the Indonesia's Islamic banks, using the VECM methods of time series
17 cointegration. It must be noted that the linkage between assets, deposits and GDP growth is
18 multilateral, which does not allow us to define the direction of causations. Also, in the short run,
19 according to Granger causality tests, the relationship between GDP and assets growth is strong.
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21 However, Johansen's cointegration tests, and the results of the VECM indicate that finance
22 growth and GDP indicators are correlated in the long run.
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31 This paper finds lend to support studies by Furqani and Mulyany (2009), Abd. Majid and
32 Kassim (2015) for Malaysia, Hassan et al., (2011) for low and middle income countries, Abduh
33 and Omar, (2012) on Indonesia, Farahani and Dastan (2013) for nine Asian countries, Mohd.
34 Yusof and Bahlous (2013) for GCC and East Asian countries, Imam and Kpodar (2016) for 52
35 countries, Ali and Azmi (2017) for OIC countries and Kim *et al.*, (2018) for 52 OIC countries.
36 These studies evidence that Islamic banking is positively and significantly correlated with
37 economic growth. In other words, Islamic banking has shown to be effective as financial
38 intermediaries that facilitate the transmission of funds from surplus households to deficit
39 households. However, our finding is not consistent with the findings of Goaid and Sassi (2010)
40 who find no significant link between Islamic banking and economic growth for MENA countries.
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Yuksel and Canoz (2017) for Turkey, Hachica and Amar (2015) for Malaysia and Naceur *et al.*, (2015) for OIC countries.

VI. Limitations and direction for future research

This study is only for Indonesian context. In order to improve the study in the future, following are some directions for further researches Islamic banking and economic growth combining some countries which have implemented Islamic financial system for a reasonable time so that adequate number of data can be collected; use different method of analysis in order to find the robustness of the results; and comparative analysis towards countries with fully Islamic financial system and dual-banking system to find the consistency of the results.

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34 *Business Research*, Vol. 8 No. 1, pp. -.

Table I
Indonesian Islamic Banks (IIBs) data and indicators

	2005	2007	2010	2012	2013	2014	2015	2016	2017
Sharia commercial banks	3	5	11	11	11	12	12	13	13
Sharia business units	20	27	23	24	23	23	22	22	21
Sharia rural banks	105	128	150	158	163	163	163	166	167
Total number of offices	550	825	2,101	2,663	2,990	2,922	2,747	2,654	2,664
Total Assets	73,433	130,264	334,557	687,869	919,543	1,028,759	1,153,768	1,326,103	1,575,308
Total Financing	57,214	99,538	242,760	512,778	710,458	789,238	810,716	948,475	1,100,014
Total Deposits	54,557	98,457	256,596	387,302	689,484	802,560	894,387	1,038,073	1,267,018

Table II
ADF unit-root test

Variable	Levels		First difference	
	ADF	PP	ADF	PP
Offices	-1.205700 (0.6652)	-1.202826 (0.6665)	-6.760153* (0.0000)	-6.764133* (0.0000)
Deposits	4.562711 (1.0000)	4.469551 (1.0000)	-4.932280* (0.0001)	-4.889842* (0.0002)
Financing	1.740474 (0.9996)	1.636033 (0.9994)	-8.879049* (0.0000)	-8.842915* (0.0000)
GDP	1.794719 (0.9997)	2.156527 (0.9999)	-7.960660* (0.0000)	-8.542825* (0.0000)

Table III
Johansen Cointegration test

Null	Trace Statistics	Critical Value 5 %	Max-Eigenvalue	Critical Value 5 %
<u>GDP</u>				
Ho : r = 0	5.585404	15.49471	5.549683	14.26460
Cointegration equation :				
GDP = -0.000865 Financing (0.00188)				
<u>Deposits</u>				
Ho : r = 0	39.22655	47.85613	20.74325	27.58434
Cointegration equation :				
Deposits = -0.230880 Financing (0.12850)				
<u>Offices</u>				
Ho : r = 0	0.035721	3.84166	0.035721	3.84166
Cointegration equation :				
Offices = -0.001473 Financing (0.00375)				

Note : all the variables are significant at 5 % level

Table IV
Granger Causality test

Granger Causality test	F-Statistic	Probability
Deposits does not Granger cause offices	3.47851	0.0160
Offices does not Granger cause Deposits	2.85441	0.0362
Financing does not Granger cause offices	0.64019	0.6370
Offices does not Granger cause Financing	1.17354	0.3374
GDP does not Granger cause offices	2.19772	0.0871
offices does not Granger cause GDP	0.64536	0.6335
Financing does not Granger cause Deposits	2.47390	0.0602
Deposits does not Granger cause Financing	3.67352	0.0124
GDP does not Granger cause Deposits	7.27906	0.0002
Deposits does not Granger cause GDP	3.91984	0.0091
GDP does not Granger cause Financing	4.75286	0.0032
Financing does not Granger cause GDP	0.87530	0.4858

Table V
Error correction model

Variables	D(GDP)	D(Deposits)	D(Financing)	D(Offices)
D(GDP)	(0.15792)	(15.0548)	(30.7801)	(0.45605)
	[-4.66354]	[-1.07755]	[-1.16872]	[-0.69541]
D(Financing)	(-0.00085)	(0.10897)	(0.22280)	(0.00235)
	[-1.73796]	[-0.25603]	[-0.78724]	[-0.25974]
D(Offices)	(0.00643)	(6.86896)	(16.0307)	(0.20808)
	[-1.28070]	[0.35651]	[2.09598]	[-0.41127]
D(Deposits)	(0.00146)	(0.13908)	(0.32565)	(0.00421)
	[0.16365]	[0.00397]	[-0.73497]	[-1.83863]

Figure 1
Impulse Response
Response to Cholesky One S.D. Innovations

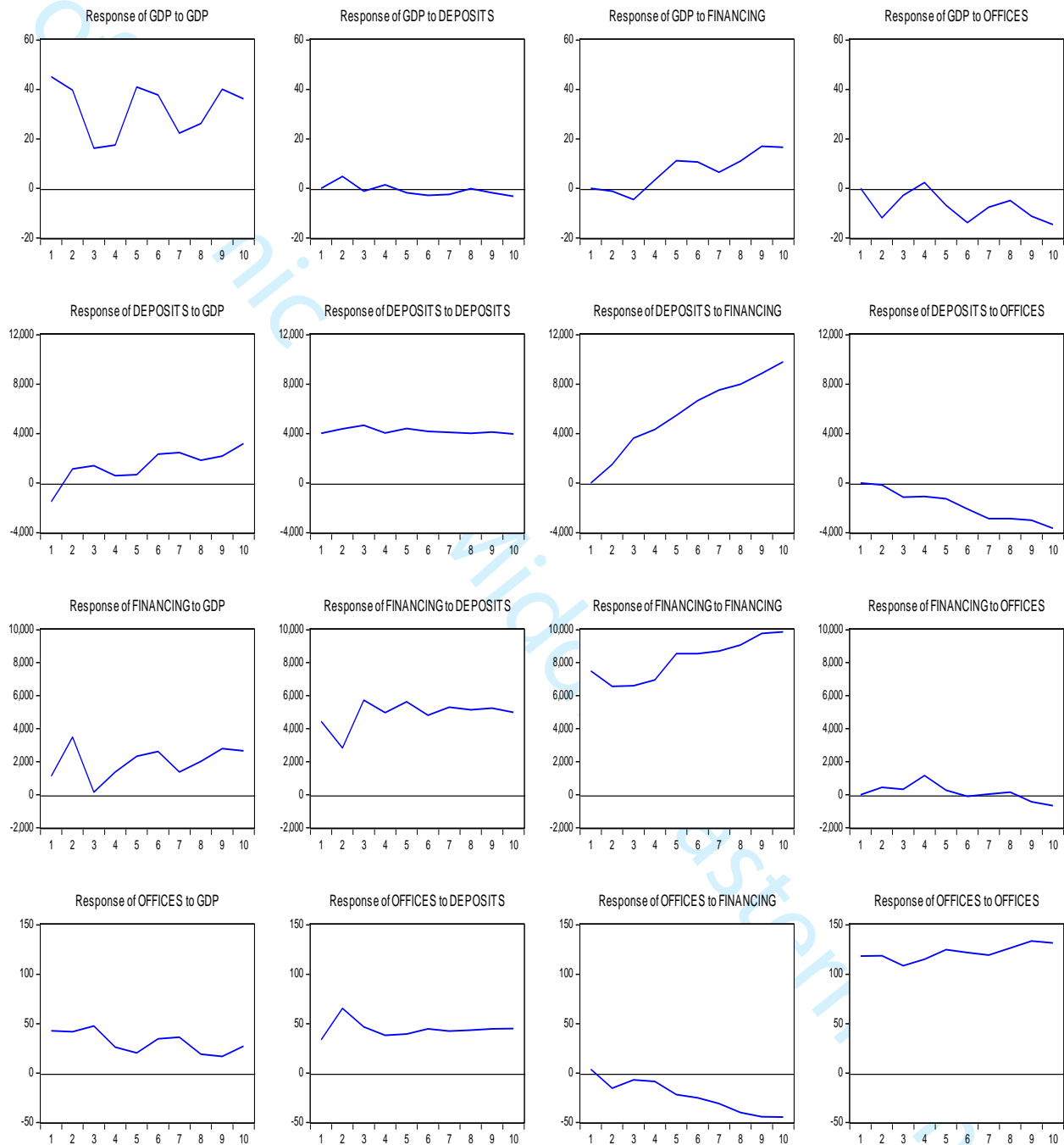
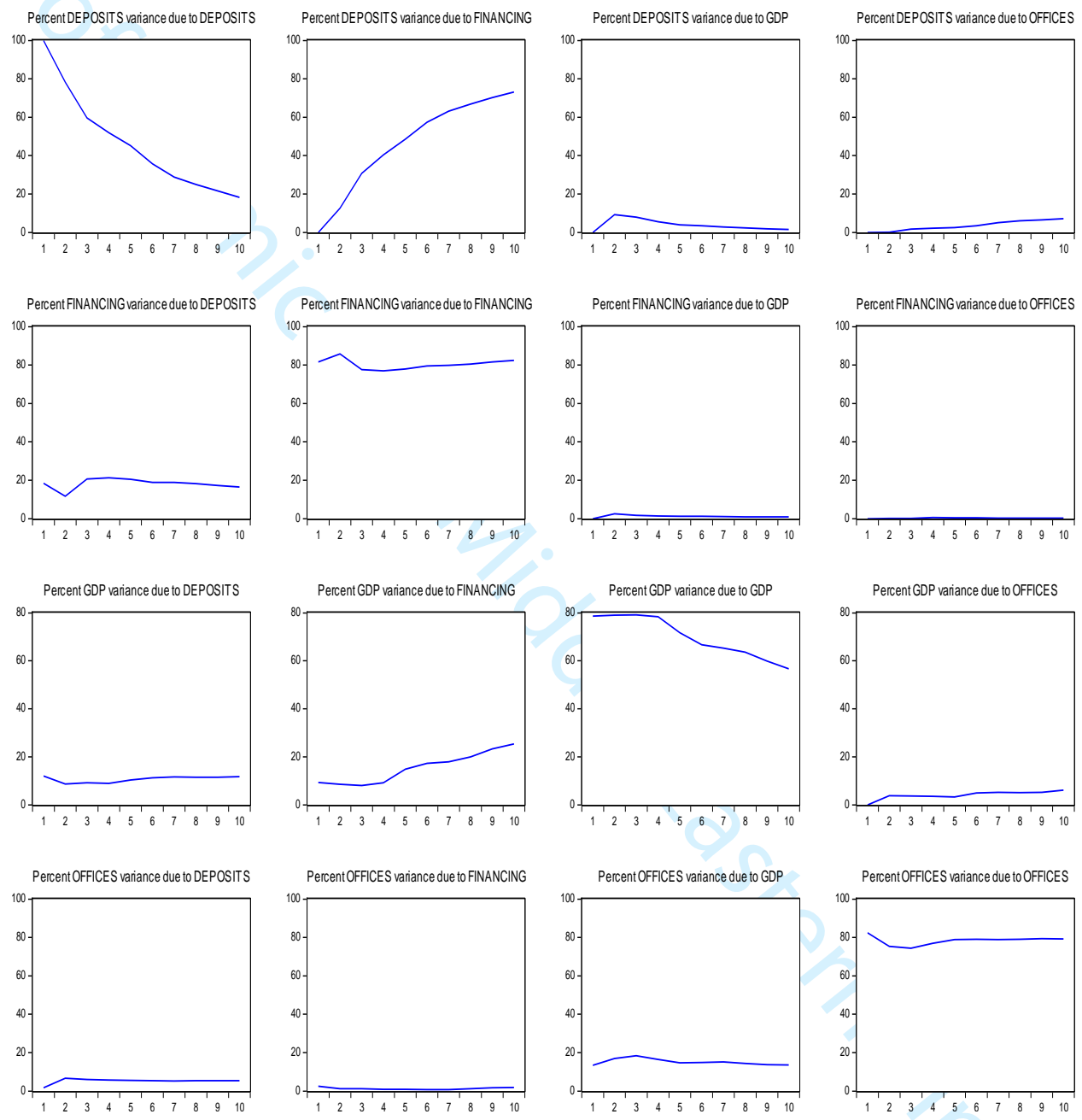


Figure 2
Variance Decomposition analysis



**2. Bukti konfirmasi review dan hasil review
pertama
(6 September 2018)**

International Journal of Islamic and Middle Eastern Finance and Management - Decision on
Manuscript ID IMEFM-02-2018-0071

Inbox



International Journal of Islamic and Middle Eastern Finance and Management <onbehalf@manuscriptcentral.com>
6, 2018,
10:56 PM

to Junaidistiem

06-Sep-2018

Dear Dr. Junaidi:

Manuscript ID IMEFM-02-2018-0071 entitled "Islamic bank contribution to Indonesian economic growth" which you submitted to the International Journal of Islamic and Middle Eastern Finance and Management, has been reviewed. The comments of the reviewer(s) are included at the bottom of this letter.

The reviewer(s) have recommended major revisions to your manuscript. Therefore, I invite you to respond to the reviewer(s)' comments and revise your manuscript.

To revise your manuscript, log into <https://mc.manuscriptcentral.com/imefm> and enter your Author Centre, where you will find your manuscript title listed under "Manuscripts with Decisions." Under "Actions," click on "Create a Revision." Your manuscript number has been appended to denote a revision.

You will be unable to make your revisions on the originally submitted version of the manuscript. Instead, revise your manuscript using a word processing program and save it on your computer. Please also highlight the changes to your manuscript within the document by using the track changes mode in MS Word or by using bold or coloured text. Once the revised manuscript is prepared, you can upload it and submit it through your Author Centre.

When submitting your revised manuscript, you will be able to respond to the comments made by the reviewer(s) in the space provided. You can use this space to document any changes you make to the original manuscript. In order to expedite the processing of the revised manuscript, please be as specific as possible in your response to the reviewer(s).

IMPORTANT: Your original files are available to you when you upload your revised manuscript. Please delete any redundant files before completing the submission.

Because we are trying to facilitate timely publication of manuscripts submitted to the International Journal of Islamic and Middle Eastern Finance and Management, your revised manuscript should be uploaded as soon as possible. If it is not possible for you to submit your revision in a reasonable amount of time, we may have to consider your paper as a new submission.

Once again, thank you for submitting your manuscript to the International Journal of Islamic and Middle Eastern Finance and Management and I look forward to receiving your revision.

Sincerely,
Prof. M. Kabir Hassan
Editor, International Journal of Islamic and Middle Eastern Finance and Management
mhassan@uno.edu

Reviewer(s)' Comments to Author:

Reviewer: 1

Recommendation: Major Revision

Comments:

An excellent effort but i refer you to my annotations in the main body of the pdf paper. Double click the yellow envelop to see each comment. Let me know if the comments are not visible. See the attached document please.

Additional Questions:

1. Originality: Does the paper contain new and significant information adequate to justify publication?: Yes, a new research on the role on Islamic finance on economic growth in Indonesia

2. Relationship to Literature: Does the paper demonstrate an adequate understanding of the relevant literature in the field and cite an appropriate range of literature sources? Is any significant work ignored?: The review is quite relevant. However, I suggested by means of annotations that review of studies based on conventional finance should be removed.

3. Methodology: Is the paper's argument built on an appropriate base of theory, concepts, or other ideas? Has the research or equivalent intellectual work on which the paper is based been well designed? Are the methods employed appropriate?: I observed some conflicts in the application of the empirical methodology. See annotations in the main paper.

4. Results: Are results presented clearly and analysed appropriately? Do the conclusions adequately tie together the other elements of the paper?: Results should be

crosschecked in line with observations in 3 above.

5. Implications for research, practice and/or society: Does the paper identify clearly any implications for research, practice and/or society? Does the paper bridge the gap between theory and practice? How can the research be used in practice (economic and commercial impact), in teaching, to influence public policy, in research (contributing to the body of knowledge)? What is the impact upon society (influencing public attitudes, affecting quality of life)? Are these implications consistent with the findings and conclusions of the paper?: See annotation notes please.

6. Quality of Communication: Does the paper clearly express its case, measured against the technical language of the field and the expected knowledge of the journal's readership? Has attention been paid to the clarity of expression and readability, such as sentence structure, jargon use, acronyms, etc.: Yes but subject to revisiting the estimation. Besides, there are a lot of English editing that needs to be done since English is the language of the Journal.

Reviewer: 2

Recommendation: Major Revision

Comments:

The writing style can be improved. Many typos and errors that should be corrected.

- I advice the author to:

" print out the paper and proof read it.

" Reconcile the literature review.

" Review sentences structures

" Give the meaning of an abbreviation when first used in the paper

" Literature review section does not need subsection? II.1 is not a proper numbering in a research paper: the other might consider merging different subsections in the Literature review section

" Review the jargon used : Page 10 "GDP is a common statistic" it is rather a _proxy_

This paper needs a general review before it can be published!

Additional Questions:

1. Originality: Does the paper contain new and significant information adequate to justify publication?: I believe this is the first study to tackle the contribution of Islamic banking to the economic growth in Indonesia.

(It is rather a relationship analysis not contribution analysis!!!)

2. Relationship to Literature: Does the paper demonstrate an adequate understanding of the relevant literature in the field and cite an appropriate range of literature sources? Is any

significant work ignored?: The littérature mentionned the most important related studies in the literature. Nevertheless, the literature review section needs to be reviewed and presented in more reader friendly way (many typos can be easily spotted !!!)

3. Methodology: Is the paper's argument built on an appropriate base of theory, concepts, or other ideas? Has the research or equivalent intellectual work on which the paper is based been well designed? Are the methods employed appropriate?: The methodology is appropriate but there are rooms of improvements.

4. Results: Are results presented clearly and analysed appropriately? Do the conclusions adequately tie together the other elements of the paper?: Not really! some mistakes when analyzing results: Granger causality is about the ability to predict X based on Y it is not about the contribution of X and Y.

5. Implications for research, practice and/or society: Does the paper identify clearly any implications for research, practice and/or society? Does the paper bridge the gap between theory and practice? How can the research be used in practice (economic and commercial impact), in teaching, to influence public policy, in research (contributing to the body of knowledge)? What is the impact upon society (influencing public attitudes, affecting quality of life)? Are these implications consistent with the findings and conclusions of the paper?: Can be improved. Limitations and future research should be more focused.

6. Quality of Communication: Does the paper clearly express its case, measured against the technical language of the field and the expected knowledge of the journal's readership? Has attention been paid to the clarity of expression and readability, such as sentence structure, jargon use, acronyms, etc.: The writing style can be improved. Many typos and errors that should be corrected.

- I advice the author to:

" print out the paper and proof read it.

" Reconcile the literature review.

" Review sentences structures

" Give the meaning of an abbreviation when first used in the paper

" Literature review section does not need subsection? II.1 is not a proper numbering in a research paper: the other might consider merging different subsections in the Literature review section

" Review the jargon used : Page 10 "GDP is a common statistic" it is rather a _proxy_

This paper needs a general review before it can be published!

**3. Bukti konfirmasi submit revisi pertama,
respon terhadap komentar reviewer dan
artikel yang disubmit
(25 September 2018)**

International Journal of Islamic and Middle Eastern Finance and Management - IMEFM-02-2018-0071.R1

Inbox



International Journal of Islamic and Middle Eastern Finance and Management <onbehalf@manuscriptcentral.com>
25, 2018,
9:40 PM

to suhardimanwar, Junaidistiem, sljstie, ready, Mispiyanti

25-Sep-2018

Dear Dr. Junaidi:

Your manuscript entitled "Islamic bank contribution to Indonesian economic growth" has been successfully submitted online and is presently being given full consideration for publication in the International Journal of Islamic and Middle Eastern Finance and Management.

Your manuscript ID is IMEFM-02-2018-0071.R1.

Please mention the above manuscript ID in all future correspondence or when calling the office for questions. If there are any changes in your street address or e-mail address, please log in to ScholarOne Manuscripts at <https://mc.manuscriptcentral.com/imefm> and edit your user information as appropriate.

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Sincerely,
International Journal of Islamic and Middle Eastern Finance and Management Editorial Office



Islamic bank contribution to Indonesian economic growth

Journal:	<i>International Journal of Islamic and Middle Eastern Finance and Management</i>
Manuscript ID	IMEFM-02-2018-0071.R1
Manuscript Type:	Research Paper
Keywords:	Islamic Banking, Economic growth, VECM, Indonesia

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Islamic bank contribution to Indonesian economic growth

I. Introduction

Today, Islamic banking has been growing rapidly all over the world and existing in almost all parts of the world, and is looked upon as a viable alternative system which has many things to offer. It was initially established to meet the Muslims' need for an interest-free financial system. Islamic banking is recognized as one of the fastest growing areas in banking and financial institutions in the world since the opening of the first Islamic bank in Egypt in 1963. The Islamic economy initiative is supported by the regional and global needs of more than 1.6 billion Muslims. The Islamic finance sector alone continues to grow with over US\$6.7 trillion predicted by 2020. The region has demonstrated dynamic leadership in Islamic finance with significant innovation. With ongoing changes in the global economy, individuals and institutions are seeking alternative financial and ethical investment privatization and transformation programmes, Islamic finance has become an important part of our future. Furthermore, today over US\$260 billion is currently invested in Islamic funds and over 300 global Islamic institutions are active around the world (S and P, 2017).

From 1998 until now, Indonesian has been faced with a relatively low level of economic growth experienced slow with just over 5 percent. Since then, the economy has not been strong and developed enough to support such a huge population and this ultimately leads to the increase of the poverty level as the unemployment rate has reached more than 10 percent in recent years. This phenomenon has resulted in many interpretations, debates and controversies among stakeholders over the IIB's role in regard to the performance comparison against conventional banking. Major financial markets discover solid evidence that Islamic finance has already been

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3 mainstreamed within the global financial system – and that it has the potential to help address the
4 challenges of ending extreme poverty and boosting shared prosperity.
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8 To increasing the presence of the Islamic banking and finance in Indonesia, it is indeed
9 timely to undertake an in-depth study on the relationship with economy growth. Islamic banking
10 rapid growth has been the main factor of many investor's increasing interest to invest in the IB's
11 industry and the contribution of the IBFIs to the overall economy significantly increases.
12 Information on the relevance and importance of the IBFIs in contributing towards the country's
13 growth process is highly sought after by the industry players and policy-makers to chart out the
14 future direction for healthy growth of the industry.
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24 Some previous empirical researches found mixed results related to the traditional point of
25 view of capital that savings boosts economic growth and/or the Keynesian point of view that
26 economic growth engender saving by Narayan and Narayan (2006), Odhiambo (2009), Kudaisi
27 (2013) and Jouni (2016). **Particular**, empirical analyses on the impact of Islamic banks financing
28 development on long-run economic growth include by Seetanah *et al.*, (2009), Goaid and Sassi
29 (2010), Halkos and Trigoni (2010), Abduh and Omar (2012), Farahani and Dastan (2013),
30 Grassa and Gazdar (2014), Hachica and Amar (2015), Daly *et al.*, (2016), Djennas (2016),
31 Imam and Kpodar (2016), Kassim (2016), Lebdaoui and Wild (2016) and Zarrouk *et al.*, (2017).
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42 This issue is of critical importance to economic development policy,
43 which tends toward appropriate strategies to promote economic growth and/or savings,
44 depending on the direction of causality and its magnitude. These studies show the crucial role
45 played by the financial sector when it is able to direct financial resources toward the financing as
46 bank intermediary function. A developed financial sector promotes a better allocation of the
47 financial resources into productive use and contributes positively to the economic growth.
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In fact, the previous studies show that Islamic banking has not worked as an engine of economic development in Malaysian, as stated by Furqani and Mulyany (2009), Hachica and Amar (2015), Turkey by Yuksel and Canoz (2017) and Zarrouk *et al.*, (2017) In UAE. How about Indonesian Islamic banks (IIBs)? Out of the extensive research carried out in this field, there are no sufficient works conducted within the Islamic financial framework. Our research extend previous evidence by investigating the Islamic finance growth relationship with economic growth. This study has two contributions to the existing literature. First to our best knowledge, this paper is the first study that empirically examines the effect of Indonesian Islamic banks on the economic growth measured by the amount of deposits, financing, GDP and offices. Second, the findings of this paper suggest that the need to accelerate the financial reforms for Islamic banks that were launched in 1991 and to improve the performance and market share to stimulate saving/financing and, consequently, long-term economic growth.

This paper consists of six sections. Section I discusses the introduction, in which the background and rationale of the study are outlined. Section II covers the review of literature, of the relationship between financial development and economic growth in the world as well as relationship with Islamic banks and economic growth. It also captures the background of Islamic banking in Indonesia. Section III covers the detail of the data and research methodology employed in this study. Section IV reports the findings and discussion. Section V outlines the conclusion, and finally, section VI suggests directions for future research.

II. Literature review

Many researches attempted to analyse empirically by exploring specific indicators to explain the causal relationship between financial development and economic growth carried

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3 out in this field. There are at least three types of causal relationships between financial
4 development and economic growth that have been found, (1) financial development is a
5 determinant of economic growth supply-leading; (2) financial development follows economic
6 growth demand-following; and (3) bidirectional causality between finance and economic
7 growth.
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14 The empirical test results are mixed and the causality patterns appear to be diverse.
15 McKinnon (1974), Jung (1986), Furqani and Mulyany (2009), Seetanah *et al.*, (2009), Halkos
16 and Trigoni (2010), Hassan *et al.*, (2011), Hachica and Amar (2015), Daly *et al.*, (2016),
17 Djennas (2016), Grassa and Gazdar (2014), Imam and Kpodar (2016), Kudaisi (2013) and Levy
18 (2016) argued that expansion of the financial system could have a positive repercussion on
19 economic growth. The financial sectors in this case act as supply leading to transfer resources
20 from the traditional, low-growth sectors to the modern high-growth sectors and to promote and
21 stimulate an entrepreneurial response in these modern sectors (Patrick, 1966, 75).
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33 Referring to the importance of Islamic financial development for a country, study on
34 causal relationship between the development of financial intermediaries' activities and economic
35 growth has been carried out extensively toward the development of financial systems leading to
36 economic growth. Hassan *et al.*, (2011) and Levy (2016) support this argument. On the other
37 hand, other authors argue that the direction from economic growth to financial development.
38 Since the economy is growing, there is an increasing demand for financial services that induces
39 an expansion in the financial sector Hsueh *et al.*, (2013) and Uddin *et al.*, (2013).
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49 Since the first time it was introduced, Islamic banking has been considered as an
50 alternative solution to conventional banking system and has grown rapidly both in Muslim and
51 non-Muslim countries. Similar to their conventional counterparts, Islamic banks function as an
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3 intermediary to channel funds from the saver sector to the deficit sector to promote activities in
4 the economy. The difference is that the financial instruments are interest free, which are
5 consistent with the *Shari'ah* laws, which are based on the *Quran* and the *Sunnah*.
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10 On the other hand, Islamic banks help to promote economic activities in two ways; First,
11 they offer capital venture in the production process by contributing to the companies' capital.
12 The effect of the contribution to financial resources according to the production requirement is
13 more efficient as compared to pure lending. This therefore is expected to have a more positive
14 impact on the economic growth. Islamic banks are also believed to bring advantages to the
15 financial and economic systems in the following ways. Also, the selfish behavior of the
16 entrepreneurs that leads to agency cost and conflict of interest between in practice, conventional
17 financial institutions is not likely to exist in an Islamic based lending due to the use of
18 *musharaka* and *mudharaba*.
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31 Naguoka (2011) explored theoretical studies about the potentialities of Islamic finance to
32 contribute to the economic growth of modern economy and the Islamic world by comparing the
33 Islamic banks products to those of conventional banks. Islamic finance is found to embed the
34 monetary sector into the real sector. It proves that Islamic finance and the real economy will able
35 to make contribution more effectively than conventional banks. Grassa and Gazdar (2014)
36 conducted a comparative study between Islamic and conventional banks in the case of GCC
37 countries, and be concluded that the Islamic bank deposits and Islamic private credits were found
38 to be relevant determinants of economic growth and performed better compared to conventional
39 banks.
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51 Hasan and Dridi (2010) have postulated that the integration of the Islamic legal
52 framework in finance and banking have enhanced the performance of the economic activity.
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3 These authors, along with many others, such as Khoutem and Nedra (2012), Ali and Azmi
4 (2017) and Boukhatem and Moussa (2017) examined the performance of both Interest-free and
5 traditional banks during the financial crisis. They have recommended the implementation and
6 generalization of the Islamic finance principles. Indeed, they have considered these principles as
7 necessary for the sake of improving the contractual equity and economic efficiency. While
8 Islamic banking system was faced with a larger decline in profitability because of the lack in risk
9 management practices, it accumulated a higher growth in assets and credit rating. This study
10 corroborated the fact that Islamic banks foster the economic and financial stability, as stated by
11 Abduh *et al.*, (2011), Kayed and Hassan (2011), Abduh and Omar (2012), Abd. Majid and
12 Kassim (2015) and Kassim (2016).

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There is clear evidence of a significant relationship between the financial and real sectors. Bank as a financial intermediaries play an important role in mobilizing savings and capital, which increases the available pool of investable capital much needed by the production side of the economy. In view of this, efforts to develop the financial sector are seen as in line with the effort to increase the productive capacity in the economy, as stated by Furqani and Mulyany (2009), Abduh and Omar (2012), Farahani and Dastan (2013), Yusof and Bahlous (2013), Imam and Kpodar (2016), Kassim (2016) and Lebdaoui and Wild (2016).

Abduh *et al.* (2011), Abduh and Chowdhury (2012), Abduh and Omar (2012), Lebdaoui and Wild (2016), Mohammed and Muhammed (2017) and Kim *et al.*, (2018) have investigated the long-run relationship and the dynamic short-run interactions between the development of Islamic banking and the economic growth. They have used the cointegration methodology and the Granger causality tests. Their results suggest a cointegration among the indicators and

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3 significant bi-directional relationship in the short run and the long run between the Islamic bank
4 financing and the economic growth.
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8 To narrow the gap in the empirical literature Hassan *et al.* (2011), Farahani and Dastan
9 (2013), Mohd. Yusof and Bahlous (2013), Imam and Kpodar (2016) and Lebdaoui and Wild
10 (2016) have used the panel approach by studying the impact of the Islamic financial
11 development on the economic growth. Other researchers, Gheeraert and Weill (2015), Levy
12 (2016) and Zarrouk *et al.* (2017), found that Islamic banking enhances macroeconomic
13 efficiency, although the effect reverses beyond a certain level of Islamic banking development.
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21 Using cointegration and Granger causality tests, with regard to the role of Islamic
22 financial development in economic growth, work by Furqani and Mulyany (2009) and Abd.
23 Majid and Kassim (2015) are among the limited articles in this area. However, using not-so-
24 different time span of quarterly data, their findings are different in terms of the direction of the
25 relationship. Furqani and Mulyany (2009) on the one hand, posit that the relationship between
26 Islamic financial development and economic growth is following the view of “demand-
27 following” which means that economic growth causes Islamic banking institutions to change and
28 develop. On the other hand, finding of Grassa and Gazdar (2014) and Imam and Kpodar (2016)
29 show that Islamic finance has started to make important contributions to the real economy by
30 effectively carrying-out the financial intermediation role of pooling and channeling funds to the
31 investment activities.
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47 In this respect, this paper provides an empirical evidence of the Islamic finance
48 development’s effect on the Indonesian economic growth. We have chosen to study the case of
49 Indonesia for four reasons. First, since its independence, Indonesia has been one of the first
50 countries to have made efforts to reform its financial systems to be integrated into one regulation
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3 to manage conventional and Islamic bank in 1991. Second, the Indonesian financial system is a
4 mixed system characterized by the simultaneous presence of Islamic and non-Islamic financial
5 institutions. This allows us to obtain more indicators of the Islamic financial development. Third,
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7 Indonesia is the country where the Islamic financial engineering is developed and supported by
8 the biggest Moslem population in the world. Finally, relative to other countries that have
9 integrated Islamic finance, Indonesia is one of the few countries having a powerful system and
10 significant of Islamic finance institution growth. This enables us to solve the problem of data
11 unavailability characterizing the developing countries.
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21 In addition to the contribution mentioned in the introduction, our research adds to the
22 literature in several ways: instead of linking deposits, financing and the amount of Islamic bank
23 offices to the economic growth. Some of the papers published in this regard are either dealing
24 with Malaysia case Furqani and Mulyany (2009), Abd. Majid and Kassim (2015); and Hachica
25 and Amar (2015), Malaysia and Indonesia case Mohd. Yusof and Bahlous (2013), Indonesian
26 Abduh and Omar (2012), Southeast Asian countries Lebdaoui and Wild (2016), the Middle east
27 case Grassa and Gazdar (2014), MENA Kar *et al.*, (2011), OIC member countries Naceur *et al.*,
28 (2015) and Ali and Azmi (2017) or rather use the total financing as proxy instead of the size or
29 the presence as it is show in the present paper. However, our major goal is to assess how Islamic
30 bank influence the economic growth in Indonesia in the short and long-run.
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45 Islamic banking and finance are experiencing a rapid growth in worldwide. The
46 international monetary fund (IMF) released a report which stated that Islamic banking is one of
47 the fastest growing segments in the financial industry with a tracking of 10-15 percent growth
48 over the past decade, and globally, Islamic banking assets are estimated to grow around 15
49 percent a year of \$1 trillion by 2016. In Indonesia, Islamic banking industry started 17 years ago,
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3 in 1992, with the establishment of the first Islamic bank in Jakarta, namely Bank Muamalat
4 Indonesia (BMI). It remained the only Islamic commercial banking (BUS) until the financial
5 crisis in 1997, which caused massive destruction to the Indonesian financial system (Bank
6 Muamalat Indonesia, 2016).
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13 After the Islamic banking act No. 21 Year 2008 concerning Islamic banking legal
14 foundations was passed by the house of representatives of Indonesia, many conventional banks
15 spin-off their Islamic windows to full-fledged Islamic bank and conversion of rural banks to
16 Islamic rural banks which base their operation within the Islamic tenets. On the other hand, the
17 demand from Muslim customers in Indonesia is also pushing the industry to fulfill their needs in
18 terms of banking transaction under *shariah* principles. Both sides of government regulation and
19 demand from customers have encouraged Islamic banking in Indonesia to grow faster.
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29 For several decades, the Islamic financial sector has become one of the best choices for
30 investors. Indonesian Islamic banks (IIBs) assets and system are growing rapidly side-by-side
31 with the conventional financial system. According to financial services authority (OJK), the
32 development of Indonesia Islamic bank is quite promising. In 2005 Indonesia Islamic banks
33 (IIBs) comprises to 3 *shariah* commercial banks (BUS), 19 *shariah* business units (UUS) and 92
34 *shariah* rural banks (BPRS) in the network with 528 offices, 20,88 trillion rupiah assets, 15,58
35 deposits and 15,23 trillion financing increase to 13 *shariah* commercial banks (BUS) supported
36 by 21 *shariah* business units (UUS) and 167 *shariah* rural banks (BPRS) with 2,664 offices,
37 60,365 employees, 424,18 trillion rupiah assets, 341,70 deposits and 286,91 trillion financing
38 with 35,22 per cent based on profit loss sharing (PLS) (table I).
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52 After the “1998 multi-dimensional crisis”, Indonesia is now transformed into one
53 of the largest democratic countries and is structurally different from what it was a decade ago.
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3 The extensive transformation in many aspects, including the rapid development of Islamic
4 banking, has provided a more resilience foundation into the Indonesian economic development
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6 today. Focusing on the rapid development of Islamic banking in Indonesia, this paper is,
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8 therefore, aimed at providing an empirical evidence of the contribution of Islamic banking
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10 towards Indonesian economy.
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14 15 **III. Data and research method**

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17 The study attempts to empirically explore the contribution of the Islamic banks to the
18 Indonesian economic growth. In this paper we use quarterly time series data from 2005:Q1 until
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20 2017:Q4 for the variables Islamic Bank total financing (TF) representing the financial sector
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22 and three variables representing the real economic sector namely real GDP, the number of IIBs
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24 offices (IBO) and deposits (DEP). The data are collected from the Indonesian Central Bureau
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26 Statistics (BPS) and quarterly Islamic statistical bulletin of bank Indonesia from financial
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28 services authority (OJK).
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34 35 Table I

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38 GDP is a common proxy to represent the income level of a particular country within a
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40 certain time range. Study about finance-growth nexus always uses GDP as the principal variable
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42 reflecting economic growth. We use the number of deposits, financing and offices as a
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44 representation of IBs performance, measuring the development of Islamic financial
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46 intermediaries and as economic indicators of the level of business activity during an accounting
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48 period, while total financing (TF) reflects the extent of Islamic financial intermediation, Thus,
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50 our models contain four variables, namely, DEP, GDP, IBO and TF, and we focus on the
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52 following one model:
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$$GDP = f(TF, DEP, IBO) \quad (1)$$

Where :

GDP = Gross Domestic product;

TF = Total Financing;

DEP = Total Deposit;

IBO = Islamic bank offices.

To provide empirical evidence of the long run integration between the Indonesia Islamic banking sector and economic growth, as well as to see the dynamic causal link between Islamic deposits, financing, offices and economic growth, we employ the vector error correction model (VECM) that can be written as follows :

$$\Delta GDP_t = \alpha_1 + \sum_{i=1}^k \beta_{1-i} \Delta GDP_{t-1} + \sum_{i=1}^k \theta_{1i} \Delta TF_{t-1} + \delta_1 \gamma_{t-1} + \varepsilon_t \quad (1)$$

$$\Delta TF_t = \alpha_1 + \sum_{i=1}^k \beta_{1-i} \Delta TF_{t-1} + \sum_{i=1}^k \theta_{1i} \Delta GDP_{t-1} + \delta_1 \gamma_{t-1} + \varepsilon_t \quad (2)$$

$$\Delta DEP_t = \alpha_1 + \sum_{i=1}^k \beta_{1-i} \Delta DEP_{t-1} + \sum_{i=1}^k \theta_{1i} \Delta TF_{t-1} + \delta_1 \gamma_{t-1} + \varepsilon_t \quad (3)$$

$$\Delta DEP_t = \alpha_1 + \sum_{i=1}^k \beta_{1-i} \Delta DEP_{t-1} + \sum_{i=1}^k \theta_{1i} \Delta TF_{t-1} + \delta_1 \gamma_{t-1} + \varepsilon_t \quad (4)$$

$$\Delta IBO_t = \alpha_1 + \sum_{i=1}^k \beta_{1-i} \Delta IBO_{t-1} + \sum_{i=1}^k \theta_{1i} \Delta TF_{t-1} + \delta_1 \gamma_{t-1} + \varepsilon_t \quad (5)$$

$$\Delta TF_t = \alpha_1 + \sum_{i=1}^k \beta_{1-i} \Delta TF_{t-1} + \sum_{i=1}^k \theta_{1i} \Delta IBO_{t-1} + \delta_1 \gamma_{t-1} + \varepsilon_t \quad (6)$$

Before we apply the Granger causality tests we have to test the stationarity of the time series into consideration to measure credible and robust results for the multivariate causality relationship among variables based on the vector error correction model (VECM) model, and the

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3 data to be analyzed should be stationary. For this purpose, the study conducts the stationarity
4 tests, that Augment Dickey-Fuller (ADF) and Philips-Perron (PP) by Schwarz info criterion (SIC).
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8 A small sample size study ranging from 30 to 80 observations was conducted, Narayan
9 (2004) has tabulated two sets of appropriate critical values. One set assumes that all variables are
10 I(1) and another assumes that they are all I(0). This provides a bound covering all possible
11 classifications of the variables into I(1) and I(0) or even fractionally integrated. If the f-statistic
12 exceeds upper bound level, the H₀ is rejected, which indicates the existence of cointegration. On
13 the other hand, if the f-statistic falls below the bound level, the H₀ cannot be rejected, which
14 supports that no cointegration exists. The second step is to test for cointegration using the
15 Johansen and Juselius tests (JJ test). The presence of cointegration suggests that the variables
16 Islamic bank deposits, financing, GDP and offices possess a long-run relationship, even though
17 they may drift a part in short-run, and consequently, there must be at least one direction of
18 causation in the Granger sense, either unidirectional or bi-directional causality.
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33 Johansen and Juselius (1990) have developed two test statistics the trace test and the
34 maximal eigenvalue test to determine the number of the cointegrating vectors. Before applying
35 JJ-cointegration tests, we need to determine the lag length in VECM model. The JJ results are
36 very sensitive to the lag length chosen; therefore should be high enough to ensure the residuals
37 are serially uncorrelated and normally distributed. But it should not be too high to avoid the
38 unbiased and inefficient estimation. However, if there is no cointegration of the variables, it
39 suggests that there is no evidence of a common trend in the movement of the two variables.
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49 The last step is to run a standard Granger causality test augmented with an appropriate
50 error-correction derived from the long-run cointegrating relationship. As the null-hypothesis of
51 non-cointegration is rejected, then the variables are integrated of order 1, I(1). Following Engle
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and Granger (1987), to see the dynamic causal link between Islamic finance and economic growth the error correction vector model (VECM) above has to be pursued.

IV. Results and discussion

According to table II, the value of descriptive statistics, the mean and median are very close, which is show of the stability of the data series, while the standard deviations are significant due to the variability between banks and time periods. To examine the statistical properties of the time series, we conduct two different unit root tests, namely augmented Dickey–Fuller (ADF) and Phillips–Perron (PP). The ADF and PP tests are testing the null hypothesis of unit root against the alternative of stationarity. Table III indicate the lags for the unit root test are set to 4 as suggested by the Akaike Information Criteria (AIC). The lag length for the ADF tests was selected to ensure that the residuals are white noise. The ADF and PP test show that all series are found to be non-stationary at level and stationary at their first difference, that is all variables are integrated of the same order, i.e. I(1), and based on this result one can expect that these series may be co-integrated as well.

This integration degree allows us to use the Johansen’s procedure to test the existence of potential cointegration vector(s) or long-run relationships between the variables of model. For each IIBs indicator, both trace and maximum eigenvalue tests reveal the existence of a double long-run relationship between indicators deposits, financing, GDP and offices (table IV).

Table III

This integration degree allows us to use the Johansen’s procedure to test the existence of potential cointegration vector(s) or long-run relationships between the variables. For each IIBs indicator, both trace and maximum eigenvalue tests reveal the existence of long-run relationship

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3 between these indicators GDP, financing, offices and deposits (table IV). The result showing that
4 null hypotheses of non-cointegration are rejected at 5 percent. This suggests that at least one
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6 cointegrating vector exists in each of the variables. The cointegration equations suggest that in
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8 the long run Islamic banks contribute to the increase of Indonesia economic growth.
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Table IV

The Granger Causality tests for Islamic banking and economic growth is given in table V. The results provide the causality of the variables, Islamic bank offices do not cause financing of Indonesia and vice versa. Bi-directional causality between office and deposits at 5% and between deposits and economic growth at the 1% level. Thus, Islamic banking encourage the development of real economic sector in Indonesia through increasing financing and intermediary role through deposits.

In the case of GDP, this finding seems to support demand following hypothesis where financing and office development follows economic growth. Here, Islamic bank financing and offices as dependent on the growth of GDP, moreover economic growth creates a demand for financial intermediation. Thus, Islamic financial institutions and services are a response to the demand from investors and savers in the economy. In this regard, economic growth causes Islamic banking institutions to change and develop. It can be concluded that in the short run Islamic banks to GDP directly seems to affect growth. This can be supported by the impulse responses and the variance decomposition analysis as shown in Figures 1 and 2.

Table V

Impulse response functions show how one variable responds over time to a single innovation in itself or another variable. Innovations in the variables are represented by shocks in

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3 the error terms in the equations. Specifically, we observe that for instance, after a 1 per cent
4 point increase in GDP, the response of deposits, financing and offices are **positive in short,**
5 **medium and long term,** positive effect for financing and experiencing fluctuations for offices and
6 deposits. On the contrary, GDP, deposits and offices react positively to a 1 per cent shock of
7 financing. The meaning that an improvement of financing and GDP stimulates.

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15 Table VI

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17 Figure 1

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21 At the same time, we compute forecast error variance decomposition, which seems to
22 reinforce the results of the impulse response functions, by determining the relative importance of
23 each variable in generating fluctuations in other variables. According to Figure 2, the results
24 show that financing, offices, and deposits are explained by 4 per cent of GDP fluctuations, while
25 deposit very important to financing, meanwhile GDP and offices does seem to be significant for
26 financing and vice versa.

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36 Figure 2

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40 In fact, a 1 per cent increase of any Islamic financing and offices indicators allows a
41 growth in Indonesia GDP 1.68 per cent and 3.41 per cent respectively, offices to deposits,
42 financing and GDP around 2.429, 9.51 and 3.41 per cent respectively. Moreover, the elasticity of
43 the Indonesian GDP with respect to the financing and offices is about 2.76 per cent and 1.76 per
44 cent, deposits to financing and offices around 29.06 percent and 16.03 percent. This result seems
45 to be consistent with the economic structure of Indonesia. In this country, the contribution of the

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3 finance and insurance sectors in 2014 and 2015 around 3.86 per cent and 4.03 per cent
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5 respectively. Slight increase in 2016 about 4.20 per cent in 2016 (table VI).
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8 **V. Conclusion**

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10 The relationship between financial development and economic growth is investigated for
11 the Indonesia's Islamic banks, using the VECM methods of time series cointegration. It must be
12 noted that the linkage between deposits, financing, GDP and offices growth is simultant, which
13 does allow us to define the direction of causations. Also, in the short run, according to Granger
14 causality tests, the relationship between GDP to financing, deposits and GDP growth is strong.
15 Furthermore,, Johansen's cointegration tests and the results of the VECM indicate that the
16 indicators are correlated in the long run.
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26 In this regard, Islamic banking has effectively played its main role as financial
27 intermediaries that facilitate the transmission of savings or deposits. Furthermore, This finding
28 also shows the reliability and contribution of Islamic banking to the real economic sectors of
29 Indonesia specifically economic growth and financing. This result also indicates that the
30 improvement of the Islamic financial infrastructure in Indonesia may benefit economic
31 development and it is important in the long run for economic welfare.
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40 This paper's findings Islamic bank contribution to economic growth similarly with
41 Furqani and Mulyany (2009), Abd. Majid and Kassim (2015) for Malaysia, Hassan et al., (2011)
42 for low and middle income countries, Abduh and Omar, (2012) on Indonesia, Farahani and
43 Dastan (2013) for nine Asian countries, Mohd. Yusof and Bahlous (2013) for GCC and East
44 Asian countries, Imam and Kpodar (2016) for 52 countries, Ali and Azmi (2017) for OIC
45 countries and Kim *et al.*, (2018) for 52 OIC countries. These studies evidence that Islamic
46 banking is positively and significantly correlated with economic growth. In other words, Islamic
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3 banking has shown to be effective as financial intermediaries that facilitate the transmission of
4 funds from surplus households to deficit households. However, our finding is not consistent with
5 the findings of Goaiad and Sassi (2010) who find no significant link between Islamic banking
6 and economic growth for MENA countries. Yuksel and Canoz (2017) for Turkey, Hachica and
7 Amar (2015) for Malaysia and Naceur *et al.*, (2015) for OIC countries.
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22 **VI. Limitations and direction for future research**

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25 This study is only for the Indonesian context. In order to improve the study in the future,
26 the following are some directions for further researches on Islamic banking and economic
27 growth combining some countries which have implemented Islamic financial system for a
28 reasonable time so that adequate number of data can be collected; use different and advanced
29 method such as ARCH-GARCH, ARIMA, GMM, ARDL framework in order to find the
30 robustness of the results; and comparative analysis towards countries with fully Islamic financial
31 system and dual-banking system to find the consistency of the results.
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Table I
Indonesian Islamic Banks (IIBs) data and indicators

	2005	2007	2010	2012	2013	2014	2015	2016	2017
Sharia commercial banks	3	5	11	11	11	12	12	13	13
Sharia business units	20	27	23	24	23	23	22	22	21
Sharia rural banks	105	128	150	158	163	163	163	166	167
Total number of offices	550	825	2,101	2,663	2,990	2,922	2,747	2,654	2,664
Total Assets	20,89	37,74	148,98	199,71	248,10	272,34	304,00	365,66	424,18
Total Financing	15,23	28,82	105,33	151,06	188,56	200,18	219,76	255,76	286,92
Total Deposits	15,59	28,72	117,51	150,46	187,20	221,89	235,98	285,16	341,71
Total Employees			20,264	31,578	43,054	50,522	60,918	59,969	60,365

Total assets, financing and deposit in trillion rupiah (IDR)

Table II
Descriptive statistics of variables used

	Offices	Deposits	Financing	GDP
Mean	2457.300	173109.6	163646.4	2465.326
Median	2647.000	179911.5	178536.5	2484.130
Maximum	3016.000	308055.0	274126.0	3366.760
Minimum	1335.000	54121.00	51896.00	1603.770
Std. Deviation	491.2872	73734.54	66403.38	517.0420
Skewnes	-0.716914	0.019537	-0.217451	0.058015
Kurtosis	2.369366	1.954874	1.841704	1.811518

Table III
ADF unit-root test

Variable	Levels		First difference	
	ADF	PP	ADF	PP
Offices	-1.205700 (0.6652)	-1.202826 (0.6665)	-6.760153* (0.0000)	-6.764133* (0.0000)
Deposits	4.562711 (1.0000)	4.469551 (1.0000)	-4.932280* (0.0001)	-4.889842* (0.0002)
Financing	1.740474 (0.9996)	1.636033 (0.9994)	-8.879049* (0.0000)	-8.842915* (0.0000)
GDP	1.794719 (0.9997)	2.156527 (0.9999)	-7.960660* (0.0000)	-8.542825* (0.0000)

Table IV
Johansen Cointegration test

Hypothesized No. of CE (s)	Eigenvalue	Trace Statistics	5 percent Critical value	1 percent Critical value	Prob.
None**	0.485973	66.61170	47.85613	54.68150	0.0004
At Most 1**	0.384913	35.33416	29.79707	35.45817	0.0104
At Most 2	0.230645	12.49253	15.49471	19.93711	0.1348
At Most 3	0.003590	0.169024	3.881466	6.634897	0.6810

* (**) denotes rejection of the hypothesis at the 5% (1%) level
Trace test indicates 2 cointegrating equation(s) at 5% and 1 at 1 % levels

Table V
Granger Causality test

Granger Causality test	F-Statistic	Probability
Deposits does not Granger cause offices	3.47851	0.0160
Offices does not Granger cause Deposits	2.85441	0.0362
Financing does not Granger cause offices	0.64019	0.6370
Offices does not Granger cause Financing	1.17354	0.3374
GDP does not Granger cause offices	2.19772	0.0871
offices does not Granger cause GDP	0.64536	0.6335
Financing does not Granger cause Deposits	2.47390	0.0602
Deposits does not Granger cause Financing	3.67352	0.0124
GDP does not Granger cause Deposits	7.27906	0.0002
Deposits does not Granger cause GDP	3.91984	0.0091
GDP does not Granger cause Financing	4.75286	0.0032
Financing does not Granger cause GDP	0.87530	0.4858

Table VI
Vector error correction model

Variables	D(GDP)	D(Deposits)	D(Financing)	D(Offices)
CointEq1	0.004900 (0.04715) [0.10393]	19.38373 (4.68429) [4.1380.]	12.15795 (10.1535) [1.19741]	-0.260609 (0.15070) [-1.72934]
D(GDP(-4))	0.375349 0.19224 [1.95254]	-41.54330 19.1000 [-2.17504]	11.46173 41.4005 [0.27685]	1.085842 0.61447 [1.76713]
D(Deposit(-4))	-0.002811 0.00172 [-1.63341]	0.227824 0.17097 [1.33252]	1.077050 0.37059 [2.90628]	0.008821 0.00550 [1.60375]
D(Financing(-4))	0.000130 0.00078 [0.16796]	0.027658 0.07716 [0.35844]	-0.213846 0.16725 [1.27857]	0.001992 0.00248 [0.80245]
D(Offices(-4))	0.032144 0.09426 [0.34103]	22.75455 9.36501 [2.42974]	19.32185 20.2992 [0.95185]	-0.060802 0.30128 [-0.20181]

Notes: R-squared = 0.714741; Adj. R-squared = 0.605671

Line 1 = coefficient, line 2 = st. error, line 3 = t value

Figure 1
Impulse Response

Response to Cholesky One S.D. (d.f. adjusted) Innovations

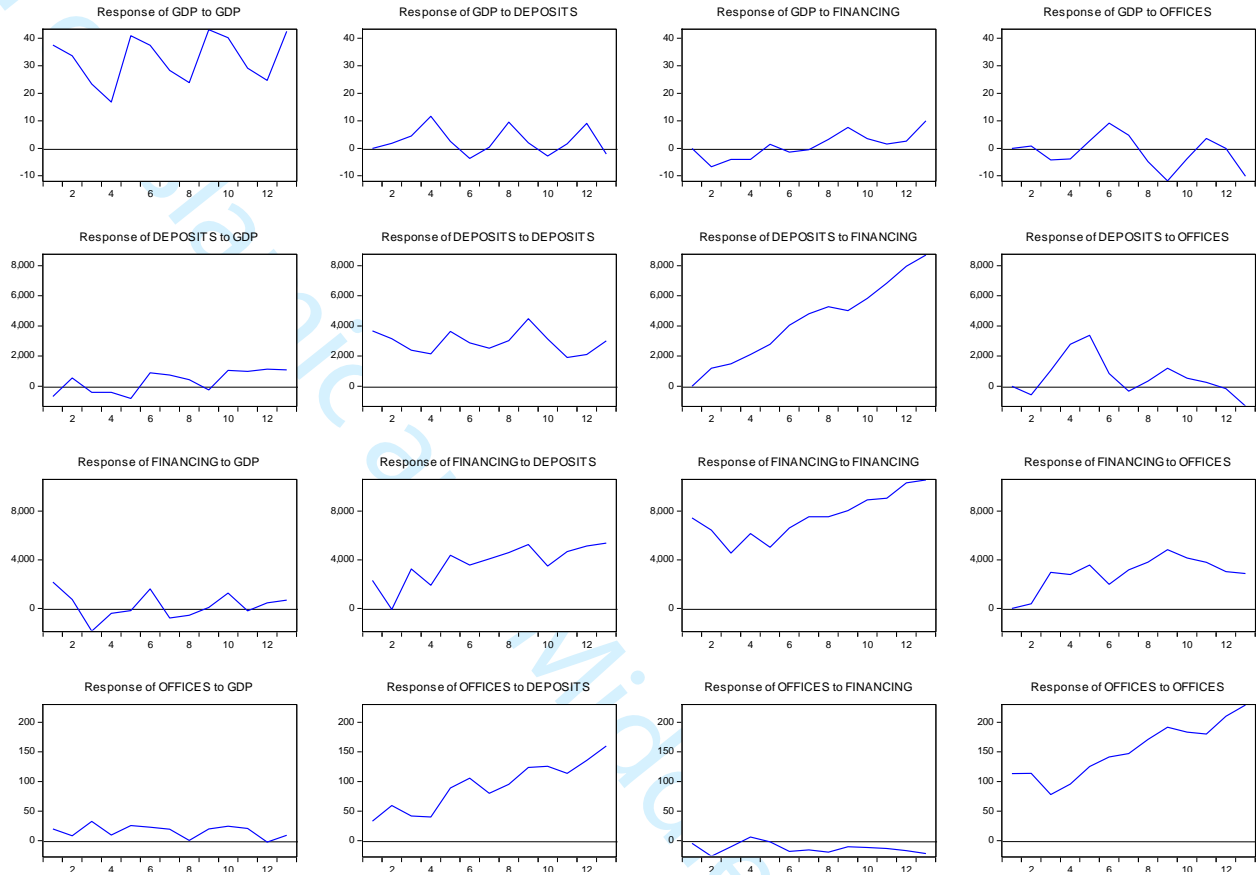
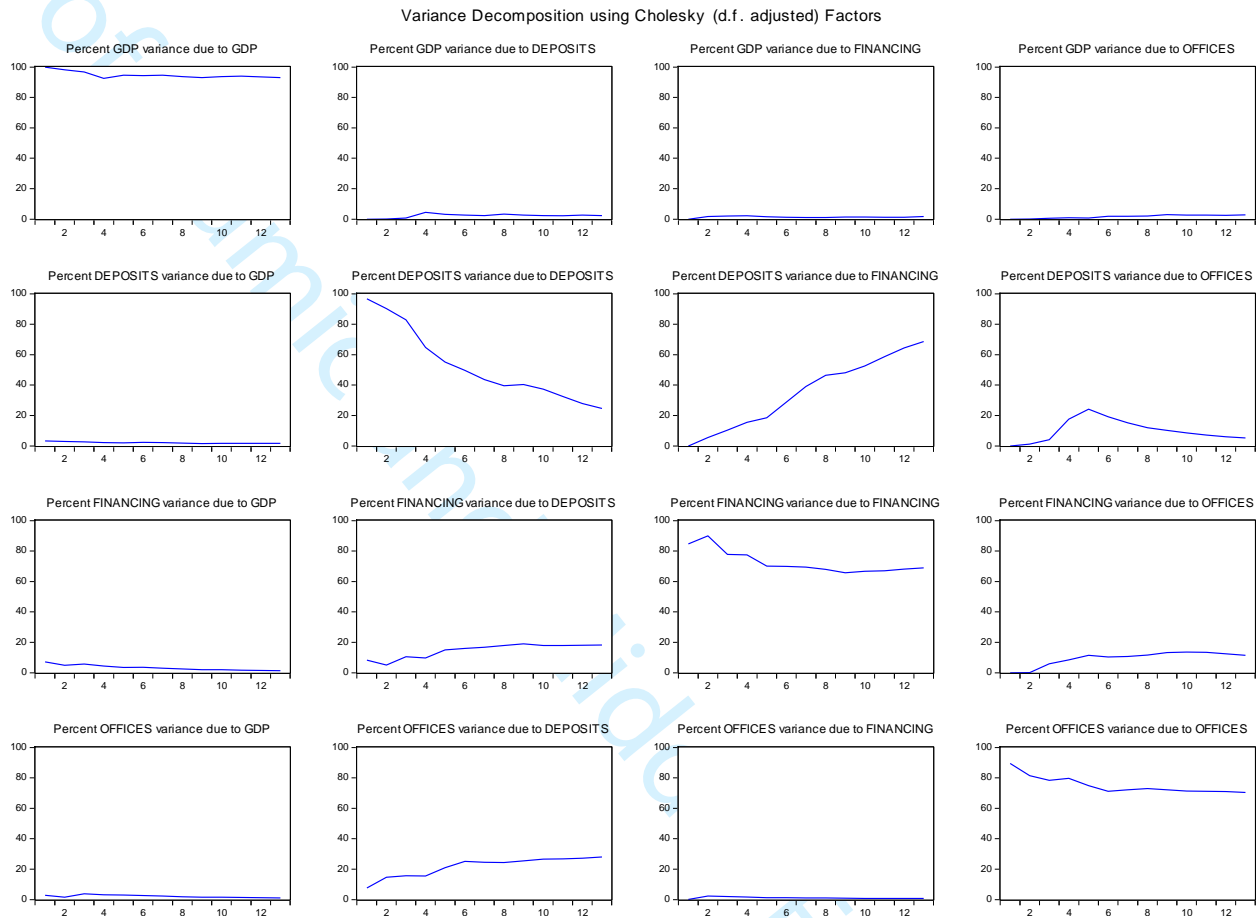


Figure 2
Variance Decomposition analysis



**4. Bukti konfirmasi review dan hasil review
Kedua
(1 Desember 2018)**

Decision Letter (IMEFM-02-2018-0071.R1)

From: mhassan@uno.edu

To: Junaidi@stiem.ac.id, suhardi@stiem.ac.id

CC:

Subject: International Journal of Islamic and Middle Eastern Finance and Management - Decision on Manuscript ID IMEFM-02-2018-0071.R1

Body: 01-Dec-2019

Dear Dr. Junaidi:

Manuscript ID IMEFM-02-2018-0071.R1 entitled "Islamic bank contribution to Indonesian economic growth" which you submitted to the International Journal of Islamic and Middle Eastern Finance and Management, has been reviewed. The comments of the reviewer(s) are included at the bottom of this letter.

The reviewer(s) have recommended minor revisions to the submitted manuscript. Therefore, I invite you to respond to the reviewer(s)' comments and revise your manuscript.

To revise your manuscript, log into <https://mc.manuscriptcentral.com/imefm> and enter your Author Centre, where you will find your manuscript title listed under "Manuscripts with Decisions." Under "Actions," click on "Create a Revision." Your manuscript number has been appended to denote a revision.

You will be unable to make your revisions on the originally submitted version of the manuscript. Instead, revise your manuscript using a word processing program and save it on your computer. Please also highlight the changes to your manuscript within the document by using the track changes mode in MS Word or by using bold or coloured text.

Once the revised manuscript is prepared, you can upload it and submit it through your Author Centre. The deadline for uploading a revised manuscript is 01-Jan-2020 from receiving this email. If it is not possible for you to resubmit your revision within this timeframe, we may have to consider your paper as a new submission.

When submitting your revised manuscript, you will be able to respond to the comments made by the reviewer(s) in the space provided. You can use this space to document any changes you make to the original manuscript. In order to expedite the processing of the revised manuscript, please be as specific as possible in your response to the reviewer(s).

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Once again, thank you for submitting your manuscript to the International Journal of Islamic and Middle Eastern Finance and Management and I look forward to receiving your revision.

Sincerely,
Prof. M. Kabir Hassan
Editor, International Journal of Islamic and Middle Eastern Finance and Management
mhassan@uno.edu

Reviewer(s)' Comments to Author:
Reviewer: 1

Comments:

Please provide resources of figure provided on introduction part. specially, the sources of all figures and facts provide. such as growth of assets , establishment of Islamic banks etc. also format the paragraph line.

Additional Questions:

1. Originality: Does the paper contain new and significant information adequate to justify publication?: this paper has presented new and significant information that related to this study but missed out some references (specially when mentioned figure in introduction part)

2. Relationship to Literature: Does the paper demonstrate an adequate understanding of the relevant literature in the field and cite an appropriate range of literature sources? Is any significant work ignored?: the literature review related to its objective and study. the authors studied recent literature which enhanced the significance of the study.

3. Methodology: Is the paper's argument built on an appropriate base of theory, concepts, or other ideas? Has the research or equivalent intellectual work on which the paper is based been well designed? Are the methods employed appropriate?: this paper exposed the argument of previous studies and argumentatively exposed on this part. as a result, the methodology is well designed and equivalent.

4. Results: Are results presented clearly and analysed appropriately? Do the conclusions adequately tie together the other elements of the paper?: this paper presented and analyzed results through previous evidence adequately.

5. Implications for research, practice and/or society: Does the paper identify clearly any implications for research, practice and/or society? Does the paper bridge the gap between theory and practice? How can the research be used in practice (economic and commercial impact), in teaching, to influence public policy, in research (contributing to the body of knowledge)? What is the impact upon society (influencing public attitudes, affecting quality of life)? Are these implications consistent with the findings and conclusions of the paper?: in regards of significance, it has presented in general. the significance can be more specified towards policy makers, investors and consumers. apart from it, it has clearly presented and demonstrate limitations and conclusion.

6. Quality of Communication: Does the paper clearly express its case, measured against the technical language of the field and the expected knowledge of the journal's readership? Has attention been paid to the clarity of expression and readability, such as sentence structure, jargon use, acronyms, etc.: yes. it does explained technical terms and links related to study.

Reviewer: 2

Comments:

Author should take care all the review comments which are mentioned above and in the attached PDF file

Additional Questions:

1. Originality: Does the paper contain new and significant information adequate to justify publication?: Yes, this paper has new and adequate information for publication.

2. Relationship to Literature: Does the paper demonstrate an adequate understanding of the relevant literature in the field and cite an appropriate range of literature sources? Is any significant work ignored?: Literature Review is okay,. However, the author/s should incorporate the following important references:

1. Tabash, M.I. and Dhankar, R.S. (2014), "Islamic finance and economic growth: an

empirical evidence from United Arab Emirates (UAE)", *Journal of Emerging Issues in Economics, Finance and Banking*, Vol. 3 No. 2, pp. 1069-1085.

2. Chowdhury, M. A. F., Akbar, C. S., & Shoyeb, M. (2018). Nexus between risk sharing vs non-risk sharing financing and economic growth of Bangladesh: ARDL bound testing and continuous wavelet transform (CWT) approach. *Managerial Finance*, 44(6), 739-758.

3. Calderón, C. and Liu, L. (2003), "The direction of causality between financial development and economic growth", *Journal of Development Economics*, Vol. 72 No. 1, pp. 321-334.

3. Methodology: Is the paper's argument built on an appropriate base of theory, concepts, or other ideas? Has the research or equivalent intellectual work on which the paper is based been well designed? Are the methods employed appropriate?: Appropriate

4. Results: Are results presented clearly and analysed appropriately? Do the conclusions adequately tie together the other elements of the paper?: There should be more discussion in the result and discussion part. Author/s should give more attention of the economic interpretation instead of the statistical interpretation.

5. Implications for research, practice and/or society: Does the paper identify clearly any implications for research, practice and/or society? Does the paper bridge the gap between theory and practice? How can the research be used in practice (economic and commercial impact), in teaching, to influence public policy, in research (contributing to the body of knowledge)? What is the impact upon society (influencing public attitudes, affecting quality of life)? Are these implications consistent with the findings and conclusions of the paper?: The implication part is satisfactory. However, author may add more in the revised version

6. Quality of Communication: Does the paper clearly express its case, measured against the technical language of the field and the expected knowledge of the journal's readership? Has attention been paid to the clarity of expression and readability, such as sentence structure, jargon use, acronyms, etc.: There are some lapses in the flowness of the paper. Please see the attached file. Author/s should take care the grammar as well.

Date Sent: 01-Dec-2019

**5. Bukti konfirmasi submit revisi kedua,
respon terhadap komentar reviewer dan
artikel yang disubmit
(18 Desember 2019)**

International Journal of Islamic and Middle Eastern Finance and Management - IMEFM-02-2018-0071.R1

Inbox



International Journal of Islamic and Middle Eastern Finance and Management <TheEditor@manuscriptcentral.com>
18, 2019,
9:40 PM

to suhardimanwar, Junaidistiem, sljstie, ready, Mispiyanti

18-Dec-2019

Dear Dr. Junaidi:

Your manuscript entitled "Islamic bank contribution to Indonesian economic growth" has been successfully submitted online and is presently being given full consideration for publication in the International Journal of Islamic and Middle Eastern Finance and Management.

Your manuscript ID is IMEFM-02-2018-0071.R2.

Please mention the above manuscript ID in all future correspondence or when calling the office for questions. If there are any changes in your street address or e-mail address, please log in to ScholarOne Manuscripts at <https://mc.manuscriptcentral.com/imefm> and edit your user information as appropriate.

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Thank you for submitting your manuscript to the International Journal of Islamic and Middle Eastern Finance and Management.

Sincerely,
International Journal of Islamic and Middle Eastern Finance and Management Editorial Office



Islamic bank contribution to Indonesian economic growth

Journal:	<i>International Journal of Islamic and Middle Eastern Finance and Management</i>
Manuscript ID	IMEFM-02-2018-0071.R2
Manuscript Type:	Research Paper
Keywords:	Islamic Banking, Economic growth, VECM, Indonesia

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Islamic bank contribution to Indonesian economic growth

1. Introduction

Today, Islamic banking is growing rapidly and existing in almost all parts of the world, and is looked upon as a viable alternative system which has many things to offer. It was initially established to meet the Muslims' need for an interest-free financial system. Islamic banking is recognized as one of the fastest growing areas in financial institutions since the opening of the first time in Egypt in 1963.

Muslims population will be more than 25% worldwide by 2030, in the same period will climb to 6.2 million from 2.6 million in the U.S., as well as several European countries will be increasing above 10% of the total residents (Solomon, 2018). Islam is the second largest and the fastest growing religion, moreover predicted become the majority in the world (Muhamad and Mizerski, 2013). The seven countries with Muslim dominated have a potential to become the largest economies, namely Bangladesh, Egypt, Indonesia, Iran, Nigeria, Pakistan and Turkey (Yousaf, 2014). With the increase of population and positive changes in the global economy, the Islamic finance has become an alternative and potentially economic sector, as well as investment in the future. The region has been portrayed enthusiastic with over US\$260 billion is currently invested in 300 global Islamic financial institutions, furthermore predict will grow more than US\$6.7 trillion in 2020 (S and P, 2017).

According to Indonesia central statistics agency (BPS), from 2004, Indonesian has been faced with a relatively low level of economic growth, which experienced just over 5%. Moreover, this phenomenon has not been strong and developed enough to alleviation of poverty, which reached more than 10% of the total population until recent years (BPS, 2017). During economic and

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3 financial crisis in 1997, the government closed sixteen and gave liquidity support 164.5 trillion
4 rupiah to fifty-six private national banks affected by the worst of non-performing loans with rise
5 to 58.7% (BI, 2000). However, bank Muamalat Indonesia (BMI) as the first Indonesia Islamic
6 bank (IIB) success to sustain operations through the crisis and without the liquidity support
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8 (Primadhyta and Agustiyanti, 2018).
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15 This phenomenon has resulted in many interpretations, debates and controversies among
16 stakeholders over the IIB's role in regard to the performance comparison against conventional
17 banking. Major financial markets discover solid evidence that Islamic finance has already been
18 mainstreamed within the global financial system and that it has the potential to help address the
19 challenges of ending extreme poverty and boosting shared prosperity. After the Islamic banking
20 legal foundations was passed by the house of representatives Indonesia in 2008, many
21 conventional and rural banks spin-off their Shariah unit business to full-fledged operation within
22 the Islamic tenets. On the other hand, the demand from Muslim customers in Indonesia is also
23 pushing the industry to fulfill their needs in terms of transaction under *Shariah* principles. Both
24 sides of government regulation and demand from customers have encouraged IIB to grow faster.
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39 To increase the presence of the Islamic banking and finance in Indonesia, it is indeed timely to
40 undertake an in-depth study on the relationship with economic growth. The rapid development of
41 Islamic banking has been the main factor of many investor's increasing interest to invest in the IIB
42 which directly positive affect to the overall economy. The relevance of information has become
43 importance of the IIB in contributing to economic towards the process is highly sought after by
44 the industry players and policy-makers to chart out the future direction for healthy growth.
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53 Some empirical test results are mixed and the causal patterns appear to be diverse which
54 revealed that the expansion of the financial system could have a positive repercussion on economic
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3 growth (Furqani and Mulyany, 2009; Hachica and Amar, 2015; Hassan *et al.*, 2011; Imam and
4 Kpodar, 2016; Jouni, 2016; Jung, 1986; Kudaisi, 2013; Levy and Ortiz, 2016; McKinnon, 1974;
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6 Narayan and Narayan, 2006; Odhiambo, 2009). Particular, empirical analyses on the impact of
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8 Islamic banks financing development of long-run economic growth (Abduh and Omar, 2012;
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10 Calderón and Liu, 2003; Chowdhury *et al.*, 2018; Djennas, 2016; Farahani and Dastan, 2013;
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12 Goaied and Sassi, 2010; Grassa and Gazdar, 2014; Halkos and Trigoni, 2010; Imam and Kpodar,
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14 2016; Kassim, 2016; Lebdaoui and Wild, 2016; Seetanah *et al.*, 2009; Tabash and Dhankar, 2014).
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20 The financial industries in this case act as supply leading to transfer resources from the
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22 traditional, low-growth to the modern high-growth and to promote and stimulate an entrepreneurial
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24 response in these sectors (Patrick, 1966, 75). On the other hand, other authors argued that the
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26 direction from economic growth to financial development. There is influence the increase of
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28 demand financial services, furthermore, that induces an expansion this sector (Hsueh *et al.*, 2013;
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30 Uddin *et al.*, 2013).
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34 This issue is of critical importance to develop policy, which tends toward appropriate strategies
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36 to promote economic growth and/or savings, depending on the direction of causality and its
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38 magnitude. These studies show the crucial role played by the financial sector when it is able to
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40 direct resources toward bank intermediary function. A developed financial sector promotes a better
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42 allocation into productive use and contributes positively to people's well-being. How about IIB?
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44 Out of the extensive research carried out in this field, there are insufficient works conducted within
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46 the Islamic financial framework. Our research extends previous evidence by investigating the
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48 relationship between IIB and economic growth. This study makes two major contributions to the
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50 economic literature. Firstly, it provides insight to understanding of the effect of IIB on the
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52 economic growth measured by the total of deposits, financing, GDP and the number of offices.
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3 Secondly, the findings of this research suggest that the need to accelerate the financial reforms for
4 Islamic banks that were launched in 1991 and to improve the performance and market share to
5 stimulate saving/financing and consequently long-term economic growth.
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11 This paper consists of six sections. Section 1 discusses the introduction, in which the
12 background and rationale of the study are outlined. Section 2 covers the review of literature, of the
13 relationship between financial development and economic growth in the world as well as the
14 contribution of IIB. It also captures the background of Islamic banking in Indonesia. Section 3
15 covers the detail of the data and research methodology employed in this study. Section 4 reports
16 the findings and discussion. Section 5 outlines the conclusion, and finally, section 6 suggests
17 directions for future research.
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28 **2. Literature review**

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30 Many researches attempted to analyze empirically by exploring specific indicators to explain
31 the causal relationship among these sectors carried out in this field. There are at least three types
32 of causal relationships, such as financial development is a determinant of economic growth supply-
33 leading, demand-following and bidirectional causality with economic growth. For the first time it
34 was introduced, Islamic banking has been considered as an alternative solution to conventional
35 banking system and has grown rapidly both in Muslim and non-Muslim countries. Similar to their
36 conventional counterparts, Islamic banks function as an intermediary to channel funds from the
37 saver to promote activities in the productive sector. The difference is that the financial instruments
38 are interest free, which are consistent with the *Shari'ah* laws, which are based on the *Quran* and
39 the *Sunnah*.
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53 On the other hand, Islamic banks help to promote economic activities in two ways; First, they
54 offer capital venture in the production process by contributing to the companies. The effect of the
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3 contribution to financial resources according to the production requirement is more efficient as
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5 compared to pure lending. Furthermore, expected to have a more positive impact on the economic
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7 growth. Islamic banks are also believed to bring advantages to the financial and economic systems
8
9 in the following ways. Also, the selfish behavior of the entrepreneurs that leads to agency cost and
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11 conflict of interest between in practice, conventional financial institutions is not likely to exist
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13 based lending due to the use of *mudharaba* and *musharaka* contracts. It proves that Islamic finance
14
15 and the real economy will able to make a contribution more effectively than conventional banks.
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19 Hasan and Dridi (2010) postulated the integration of the Islamic legal framework in finance and
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21 banking has enhanced the performance of the economic activity. These authors are along with
22
23 many others, such as Ali and Azmi (2017), Boukhatem and Moussa (2017), Grassa and Gazdar
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25 (2010), Khoutem and Nedra (2012) examined the performance of both interest-free and traditional
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27 banks during the financial crisis. They recommended the implementation and generalization of the
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29 Islamic finance principles. Indeed, considered these principles as necessary for the sake of
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31 improving the contractual equity and economic efficiency. These studies corroborated the fact that
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33 Islamic banks foster the economic and financial stability (Abd. Majid and Kassim, 2015; Abduh
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35 and Omar, 2012; Abduh *et al.*, 2011; Kayed and Hassan, 2011; Kassim, 2016).
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40 There is clear evidence of a significant relationship between financial and real sectors. Bank
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42 play an important role in mobilizing capital and savings, which increases the available pool of real
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44 investor much needed by the production side of the economy. In view of this, efforts to develop
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46 the financial industry are seen as in line with the activities to increase the productive capacity
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48 (Abduh and Omar, 2012; Farahani and Dastan, 2013; Furqani and Mulyany, 2009; Imam and
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50 Kpodar, 2016; Kassim, 2016; Lebdaoui and Wild, 2016; Mohd. Yusof and Bahlous, 2013).
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3 Abduh and Chowdhury (2012), Abduh and Omar (2012), Abduh *et al.* (2011), Chowdhury *et*
4 *al.*, (2018), Kim *et al.*, (2018), Lebdaoui and Wild (2016) and Tabash and Dhankar (2014) have
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6 investigated the long-run relationship and the dynamic short-run interactions between the
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8 development of Islamic banking and the economic growth through used the cointegration
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10 methodology and the Granger causality tests. They found that cointegration and the significant bi-
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12 directional relationship between the indicators in the short run and the long run between Islamic
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14 bank financing and economic growth.
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19 To narrow the gap in the empirical literature Hassan *et al.* (2011), Farahani and Dastan (2013),
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21 Mohd. Yusof and Bahlous (2013), Imam and Kpodar (2016) and Lebdaoui and Wild (2016) have
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23 used the panel approach by studying the impact of the Islamic financial development on the
24
25 economic growth. Other researchers, Gheeraert and Weill (2015), Levy and Ortiz (2016) and
26
27 Zarrouk *et al.* (2017), found that Islamic banking enhances macroeconomic efficiency, although
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29 the effect reverses beyond a certain level of development.
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33 Using cointegration and Granger causality tests, with regard to the role of Islamic financial
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35 development in economic growth (Abd. Majid and Kassim, 2015; Chowdhury *et al.*, 2018;
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37 Furqani and Mulyany, 2009; Tabash and Dhankar, 2014) are among the limited articles in this
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39 area. However, using not quite different time span of quarterly data, their findings is different in
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41 terms of the direction of the relationship. Furqani and Mulyany (2009) on the one hand, posit that
42
43 the relationship between Islamic financial development and economic growth is following the view
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45 of “demand-following” which means that economic growth causes Islamic banking institutions to
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47 change and develop. On the other hand, Grassa and Gazdar (2014) and Imam and Kpodar (2016)
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49 found that Islamic finance has started to make important contributions to the real economy by
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effectively carrying-out the financial intermediation role of pooling and channeling funds to the investment activities.

In this respect, this paper provides an empirical evidence of the Islamic finance development's effect on the Indonesian economic growth. We have chosen to study the case of Indonesia for four reasons. First, since its independence, Indonesia has been one of the first countries to have made efforts to reform its financial systems to be integrated into one regulation to manage conventional and Islamic bank in 1991. Second, the Indonesian financial system is a mixed system characterized by the simultaneous presence of Islamic and non-Islamic financial institutions. This allows us to obtain more indicators of the Islamic financial development. Third, Indonesia is the country where the Islamic financial engineering is developed and supported by the biggest Moslem population in the world. Finally, relative to other countries that have integrated Islamic finance, Indonesia is one of the few countries having a powerful system and signs of Islamic finance institution growth. This enables us to solve the problem of data unavailability characterizing the developing countries.

In addition to the contribution mentioned in the introduction, our research adds to the literature in several ways: instead of linking deposits, financing and the number of IIB offices to the economic growth. Some of the papers published in this regard are either dealing with Malaysia (Abd. Majid and Kassim, 2015; Furqani and Mulyany, 2009; Hachica and Amar, 2015), Malaysia and Indonesia (Mohd. Yusof and Bahlous, 2013), Indonesian (Abduh and Omar, 2012), UAE (Tabash and Dhankar, 2014), Southeast Asian countries (Lebdaoui and Wild, 2016), the Middle East (Grassa and Gazdar, 2014), MENA (Kar *et al.*, 2011), OIC member countries (Ali and Azmi, 2017; Naceur *et al.*, 2015) and Bangladesh (Chowdhury *et al.*, 2018) or rather use the total financing as a proxy instead of the size or the presence as it is shown in the present research.

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3 However, our major goal is to assess how Islamic bank influences the economic growth in
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5 Indonesia in the short and long-run.
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8 For several decades, the Islamic financial sector has become one of the best choices for
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10 investors. The IIB assets and system are growing rapidly side-by-side with the conventional
11
12 financial system. According to Indonesia of financial services authority (OJK), the development
13
14 of IIB is quite promising (OJK, 2018), which in 2005 comprises to 3 *Shariah* commercial banks
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16 (BUS), 19 *Shariah* business units (UUS) and 92 *Shariah* rural banks (BPRS) in the network with
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18 528 offices, 20.88 trillion rupiah assets, 15.58 trillion deposits and 15.23 trillion financing increase
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20 to 13 *Shariah* commercial banks (BUS) supported by 21 *Shariah* business units (UUS) and 167
21
22 *Shariah* rural banks (BPRS) with 2,664 offices, 60,365 employees, 424.18 trillion rupiah assets,
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24 341.70 million deposits and 286,91 trillion financing with 35,22% based on profit loss sharing
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26 (PLS) (table I).
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31 After the “1998 multi-dimensional crisis”, Indonesia is now transformed into one of the largest
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33 democratic countries and is structurally different from what it was a decade ago. The extensive
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35 transformation in many aspects, including the rapid development of Islamic banking, has provided
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37 a more resilience foundation in the Indonesian economic development today. Focusing on the rapid
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39 development of Islamic banking in Indonesia, this paper is, therefore, aimed at providing an
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41 empirical evidence of the contribution of Islamic banking towards Indonesian economy.
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45 **3. Data and research method**

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47 The study attempts to empirically explore the contribution of the Islamic banks to the Indonesian
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49 economic growth. In this paper, we use quarterly time series data from 2005:Q1 until 2017:Q4 for
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51 the variables Islamic Bank total financing (TF) representing the financial sector and three
52
53 variables representing the real economic sector, namely real GDP, the number of IIB offices
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55 (IBO) and deposits (DEP). The data are collected from the Indonesian Central Bureau Statistics
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(BPS) and quarterly Islamic statistical bulletin of bank Indonesia from financial services authority (OJK).

Table I

GDP is a common proxy to represent the income level of a particular country within a certain time range. Study about finance-growth nexus always uses GDP as the principal variable reflecting economic growth. We use the number of deposits, financing and offices as a representation of IIB performance, measuring the development of Islamic financial intermediaries and as economic indicators of the level of business activity during an accounting period, while total financing (TF) reflects the extent of Islamic financial intermediation, Thus, our models contain four variables, namely, DEP, GDP, IBO and TF, and we focus on the following one model:

$$GDP = f(TF, DEP, IBO) \quad (1)$$

Where:

GDP = Gross Domestic product;

TF = Total Financing;

DEP = Total Deposit;

IBO = Islamic bank offices.

To provide empirical evidence of the long run integration between IIB sector and economic growth, as well as to see the dynamic causal link between Islamic deposits, financing, offices and economic growth, we employ the vector error correction model (VECM) that can be written as follows:

$$\Delta GDP_t = \alpha_1 + \sum_{i=1}^k \beta_{1-i} \Delta GDP_{t-1} + \sum_{i=1}^k \theta_{1i} \Delta TF_{t-1} + \delta_1 \gamma_{t-1} + \varepsilon_t \quad (1)$$

$$\Delta TF_t = \alpha_1 + \sum_{i=1}^k \beta_{1-i} \Delta TF_{t-1} + \sum_{i=1}^k \theta_{1i} \Delta GDP_{t-1} + \delta_1 \gamma_{t-1} + \varepsilon_t \quad (2)$$

$$\Delta DEP_t = \alpha_1 + \sum_{i=1}^k \beta_{1-i} \Delta DEP_{t-1} + \sum_{i=1}^k \theta_{1i} \Delta TF_{t-1} + \delta_1 \gamma_{t-1} + \varepsilon_t \quad (3)$$

$$\Delta DEP_t = \alpha_1 + \sum_{i=1}^k \beta_{1-i} \Delta DEP_{t-1} + \sum_{i=1}^k \theta_{1i} \Delta TF_{t-1} + \delta_1 \gamma_{t-1} + \varepsilon_t \quad (4)$$

$$\Delta IBO_t = \alpha_1 + \sum_{i=1}^k \beta_{1-i} \Delta IBO_{t-1} + \sum_{i=1}^k \theta_{1i} \Delta TF_{t-1} + \delta_1 \gamma_{t-1} + \varepsilon_t \quad (5)$$

$$\Delta TF_t = \alpha_1 + \sum_{i=1}^k \beta_{1-i} \Delta TF_{t-1} + \sum_{i=1}^k \theta_{1i} \Delta IBO_{t-1} + \delta_1 \gamma_{t-1} + \varepsilon_t \quad (6)$$

Before we apply the Granger causality tests we have to test the stationarity of the time series into consideration to measure credible and robust results for the multivariate causality relationship among variables based on the vector error correction model (VECM) model, and the data to be analyzed should be stationary. For this purpose, the study conducts the Augment Dickey-Fuller (ADF) and Philips-Perron (PP) by Schwarz info criterion (SIC).

A small sample size study ranging from 30 to 80 observations was conducted, Narayan (2004) has tabulated two sets of appropriate critical values. One set assumes that all variables are I(1) and another assumes that they are all I(0). This provides a bound covering all possible classifications of the variables into I(1) and I(0) or even fractionally integrated. If the f-statistic exceeds the upper bound level, the H0 is rejected, which indicates the existence of cointegration. On the other hand, if the f-statistic falls below the bound level, the H0 cannot be rejected, which supports that no cointegration exists. The second step is to test for cointegration using the Johansen and Juselius tests (JJ test). The presence of cointegration suggests that the variables Islamic bank deposits, financing, GDP and offices possess a long-run relationship, even though they may drift apart in short-run, and consequently, there must be at least one direction of causation in the Granger sense, either unidirectional or bidirectional causality.

Johansen and Juselius (1990) have developed two test statistics the trace and the maximal eigenvalue to determine the number of the cointegrating vectors. Before applying JJ-cointegration tests, we need to determine the lag length in VECM model. The JJ results are very sensitive to the lag length chosen; therefore should be high enough to ensure the residuals are serially uncorrelated and normally distributed. But it should not be too high to avoid the unbiased and inefficient estimation. However, if there is no cointegration of the variables, it suggests that there is no evidence of a common trend in the movement of the two variables.

The last step is to run a standard Granger causality test augmented with an appropriate error-correction derived from the long-run cointegrating relationship. As the null-hypothesis of non-cointegration is rejected, then the variables are integrated of order 1, $I(1)$. Following Engle and Granger (1987), to see the dynamic causal link between Islamic finance and economic growth the error correction vector model (VECM) above has to be pursued.

4. Results and discussion

According to table II, the value of descriptive statistics, the mean and median are very close, which is shown of the stability of the data series, while the standard deviations are significant due to the variability between banks and time periods. To examine the statistical properties of the time series, we conduct two different an unit root test, namely augmented Dickey–Fuller (ADF) and Phillips–Perron (PP). The ADF and PP tests are testing the null hypothesis of a unit root against the alternative of stationarity. Table III indicated the lags for the unit root test are set to 4 as suggested by the Akaike information criteria (AIC). The lag length for the ADF tests was selected to ensure that the residuals are white noise. The ADF and PP test show that all series are found to be non-stationary at a level and stationary at their first difference, that is all variable are integrated of the same order and the time series data cannot be rejected on varying levels in a logarithm form.

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3 However, all the variable significance levels and stationary in their first differences. Therefore,
4 they are integrated of order one I(1).
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9 Table III

10 This integration degree allows us to use the Johansen's procedure to test the existence of
11 potential cointegration vector(s) or long-run relationships between the variables. For each IIB
12 indicator, both trace and maximum eigenvalue tests reveal the existence of long-run relationship
13 between these indicators GDP, financing, offices and deposits (table IV). The result shows that
14 null hypotheses of non-cointegration are rejected by 5%. This suggests that at least one
15 cointegrating vector exists in each of the variables. The cointegration equations suggest that in the
16 long run Islamic banks contribute to the increase of Indonesia economic growth.
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28 Table IV

29 The results of Granger test provided the causality of the variables, IIB offices do not cause the
30 financing of Indonesia and vice versa. Unidirectional GDP to offices and financing in 10% and
31 1%. Bidirectional causality between office and deposits at 5% and between deposits and economic
32 growth at the 1% level, as well as financing and deposit which have a bi-directional causality at
33 10% and 1%, respectively. Moreover, between deposit have a significant bi-directional causality
34 to Indonesia economic growth at 1% (table V). The customer deposit to the IIB as a percentage of
35 GDP reflects the extent to which saving is liquid. This validated previous researchers for instance
36 Calderón and Liu (2003), King and Levine (1993) and Levine *et al.* (2000) revealed that proxy of
37 financial development has a relationship with economic growth.
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51 Thus, Islamic banking encourages the development of the real economic sector in Indonesia
52 through increasing financing and the number of offices, which are able to utilize funds more
53 efficiently and productively as intermediary role. IIB financing, which reflecting the access of
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3 financial resources to stimulate Indonesia economic growth. Furthermore, the quality of
4 contribution IIB would be improved by direct investment inflow. It is also argued that deposit,
5 financing and the offices of IIB provided to the private and public sector will enhance real output.
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10 The recent findings are similarly with previous researches such as in Malaysia (Abd. Majid and
11 Kassim, 2015), low and middle income countries (Hassan *et al.*, 2011), Indonesia (Abduh and
12 Omar, 2012), , GCC and East Asian countries (Mohd. Yusof and Bahlous, 2013), 52 countries
13 (Imam and Kpodar, 2016), OIC countries (Ali and Azmi, 2017; Kim *et al.*, 2018). These studies
14 have proven that Islamic banking is positive and significantly correlated with economic growth. In
15 other words, Islamic banking has shown to be effective as financial intermediaries that facilitate
16 the transmission of funds from surplus households to deficit households. However, our result is
17 not consistent with Goaid and Sassi (2010) who found no significant link between Islamic
18 banking and economic growth for MENA countries, Turkey (Yuksel and Canoz, 2017), Malaysia
19 (Furqani and Mulyany, 2009; Hachica and Amar, 2015), nine Asian countries (Farahani and
20 Dastan, 2013) and OIC countries (Naceur *et al.*, 2015). This result supports the view of of Calderón
21 and Liu (2003), Gurley and Shaw (1967), King and Levine (1993), Levine *et al.*, (2000), Patrick
22 (1966) who have hypothesized that in developing countries economic growth leads the expansion
23 of the financial sector. It can be seen in table I that total deposit and total financing of the IIB are
24 moving together for the long run.
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45 In line with these studies, our results indicate only a one-way causality that runs from real
46 GDP to IIB financing and office development. This can be explained by the fact that although
47 Islamic finance has grown rapidly, the Islamic bank sector in the Indonesia is still slow down
48 market within global financial markets. In spite of a market more than 200 million Muslims, the
49 IIB still an inconvenience luring consumers. During the our period of analysis, the market share
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of IIB was stagnant around at 5% (Swastika, 2016). According to International Monetary Fund (2017) the Indonesia Islamic financial industry is dominated by capital market products, including *Shari'ah* stocks, Sukuk and mutual funds which collectively accounts for 83%, the financing of IIB is largely provided through debt-based *Murabahah* contracts.

This can be supported by the impulse responses (IRFs) and the variance decomposition analysis (VDCs) as shown in Figures 1 and 2. As evidence that among proxy measures have a dynamic relationship and how the two measures of Islamic bank intermediary function (deposits, financing and offices) affect economic growth (GDP) over time. Generally impulse response function processed toward Choleski decomposition which used to identify the system of equation function. However, the result of this function depends on the ordering variables (Hassan *et al.*, 2011). Therefore, in order to stimulate of the equations we applied the impulse response function which proposed by Pesaran and Shin (1998).

Table V

At the same time, we compute VDCs to assess the short run dynamics of the relationship between IIB and economic growth, by determining the relative importance of each variable in generating fluctuations in other variables. Our findings suggest that IIB channel as measured by total deposit, financing and the number of offices have a bi-directional and positive shock around 4% of growth (Figure 1). While deposit very important to financing, meanwhile the number of offices does seem to be significant for financing. It is also important to note that IIB has a role to increase Indonesia economic growth in the short run.

Table VI

Figure 1

VDCs given the information on the relative strength of deposit, financing and offices to GDP in the short run, the IRFs trace the effects of a shock to one endogenous variable in the other variables. To further substantiate our earlier findings on the VDCs, we further employ the IRFs to trace the direction of transmission of IIB to economic growth. Impulse response functions show how one variable responds over time to another variable. It represented by shocks in the error terms in the equations. Specifically, the Islamic banking sector development seems to have an instantaneous significant positive correlation with the GDP. Over 1% increase in GDP, the response of deposits, financing and offices are positive in short, medium and long term. Moreover, the shock of financing positive effect to offices and deposits, as well as GDP. The meaning that an improvement of financing and GDP stimulates.

Figure 2

In fact, a 1% increase of any Islamic financing and offices indicators allows a growth in Indonesia GDP 1.68% and 3.41%, respectively, offices to deposits, financing and GDP around 2.43%, 9.51% and 3.41% respectively. Moreover, the elasticity of the Indonesian GDP with respect to the financing and offices is about 2.76% and 1.76%, deposits to financing and offices around 29.06% and 16.03% (table VI).

5. Conclusion

The relationship between financial development and economic growth is investigated for the Indonesia's Islamic banks, using the VECM methods of time series cointegration. It must be noted that the linkage between deposits, financing, GDP and offices growth is simultaneously, which

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3 makes allow us to define the direction of causations. Also, in the short run, according to Granger
4 causality tests, the relationship between GDP to financing, deposits and GDP growth is strong.
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6 Furthermore, Johansen's cointegration tests and the results of the VECM indicate that the
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8 indicators are correlated in the long run.
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12 In this regard, Islamic banking has effectively played its main role as financial intermediaries
13 that facilitate the transmission of savings or deposits. Furthermore, this finding also shows the
14 reliability and contribution of Islamic banking to the real economic sectors of Indonesia
15 specifically capital accumulation to stimulate economic growth. Moreover, this paper result also
16 showed that the improvement of the Islamic financial infrastructure in Indonesia may benefit
17 economic development and it is important in the long run for economic welfare. However, the
18 development of Islamic banking boosts economic growth and vice versa as a proven the
19 relationship between Islamic financing and Indonesia economic growth is bi-directional.
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31 This paper's findings are similarly with previous researches such as in Malaysia (Abd.
32 Majid and Kassim, 2015), low and middle income countries (Hassan et al., 2011), Indonesia
33 (Abduh and Omar, 2012), , GCC and East Asian countries (Mohd. Yusof and Bahlous, 2013), 52
34 countries (Imam and Kpodar, 2016), OIC countries (Ali and Azmi, 2017; Kim *et al.*, 2018). These
35 studies evidence that Islamic banking is positively and significantly correlated with economic
36 growth. In other words, Islamic banking has shown to be effective as financial intermediaries that
37 facilitate the transmission of funds from surplus households to deficit households. However, our
38 finding is not consistent with the findings of Goaid and Sassi (2010) who find no significant link
39 between Islamic banking and economic growth for MENA countries, Turkey (Yuksel and Canoz,
40 2017), Malaysia (Furqani and Mulyany, 2009; Hachica and Amar, 2015), nine Asian countries
41 (Farahani and Dastan, 2013) and OIC countries (Naceur *et al.*, 2015).
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The numbers of implications this research. First, the Indonesian government should continue to promote Islamic banking as it has shown to positive the economic growth and more resilience to the crisis. This can be done by not only setting a to increase the current asset ratio (CAR) and the number of Islamic bank, but also the quality of the IIB, as well as how to maintain people trust with Islamic banks products and services. Second, today, as the number of Indonesia Islamic financial institutions significantly increases, there is also a need to have sufficient skill to manage these institutions, especially the competent Shariah personnel and advisers apart from trained Islamic bankers and competent scholar, specifically pursue and recruit potential students which have specific of Islamic banking and finance skills such as *Fiqh Muamallah*. Moreover, Indonesia Islamic bank (IIB) must be adopt the current of financial technology to improve their products and services.

VI. Limitations and direction for future research

This study is only in the Indonesian context. In order to improve the study in the future, the following are some directions for further researches on Islamic banking and economic growth, combining some countries which have implemented Islamic financial system for a reasonable time so that adequate amount of data can be collected; use different and advanced method such as ARCH-GARCH, ARIMA, GMM, ARDL framework in order to find the robustness of the results; and comparative analysis towards countries with fully Islamic financial system and dual-banking system to find the consistency of the results.

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Table I
Indonesian Islamic Banks (IIBs) data and indicators

	2005	2007	2010	2012	2013	2014	2015	2016	2017
Sharia commercial banks	3	5	11	11	11	12	12	13	13
Sharia business units	20	27	23	24	23	23	22	22	21
Sharia rural banks	105	128	150	158	163	163	163	166	167
Total number of offices	550	825	2,101	2,663	2,990	2,922	2,747	2,654	2,664
Total Assets	20,89	37,74	148,98	199,71	248,10	272,34	304,00	365,66	424,18
Total Financing	15,23	28,82	105,33	151,06	188,56	200,18	219,76	255,76	286,92
Total Deposits	15,59	28,72	117,51	150,46	187,20	221,89	235,98	285,16	341,71
Total Employees			20,264	31,578	43,054	50,522	60,918	59,969	60,365

Total assets, financing and deposit in trillion rupiah (IDR)

Table II
Descriptive statistics of variables used

	Offices	Deposits	Financing	GDP
Mean	2457.300	173109.6	163646.4	2465.326
Median	2647.000	179911.5	178536.5	2484.130
Maximum	3016.000	308055.0	274126.0	3366.760
Minimum	1335.000	54121.00	51896.00	1603.770
Std. Deviation	491.2872	73734.54	66403.38	517.0420
Skewnes	-0.716914	0.019537	-0.217451	0.058015
Kurtosis	2.369366	1.954874	1.841704	1.811518

Table III
ADF unit-root test

Variable	Levels		First difference	
	ADF	PP	ADF	PP
Offices	-1.205700 (0.6652)	-1.202826 (0.6665)	-6.760153* (0.0000)	-6.764133* (0.0000)
Deposits	4.562711 (1.0000)	4.469551 (1.0000)	-4.932280* (0.0001)	-4.889842* (0.0002)
Financing	1.740474 (0.9996)	1.636033 (0.9994)	-8.879049* (0.0000)	-8.842915* (0.0000)
GDP	1.794719 (0.9997)	2.156527 (0.9999)	-7.960660* (0.0000)	-8.542825* (0.0000)

Table IV
Johansen Cointegration test

Hypothesized No. of CE (s)	Eigenvalue	Trace Statistics	5 percent Critical value	1 percent Critical value	Prob.
None**	0.485973	66.61170	47.85613	54.68150	0.0004
At Most 1**	0.384913	35.33416	29.79707	35.45817	0.0104
At Most 2	0.230645	12.49253	15.49471	19.93711	0.1348
At Most 3	0.003590	0.169024	3.881466	6.634897	0.6810

* (**) denotes rejection of the hypothesis at the 5% (1%) level
Trace test indicates 2 cointegrating equation(s) at 5% and 1 at 1 % levels

Table V
Granger Causality test

Granger Causality test	F-Statistic	Probability
Deposits does not Granger cause offices	3.47851	0.0160
Offices does not Granger cause Deposits	2.85441	0.0362
Financing does not Granger cause offices	0.64019	0.6370
Offices does not Granger cause Financing	1.17354	0.3374
GDP does not Granger cause offices	2.19772	0.0871
offices does not Granger cause GDP	0.64536	0.6335
Financing does not Granger cause Deposits	2.47390	0.0602
Deposits does not Granger cause Financing	3.67352	0.0124
GDP does not Granger cause Deposits	7.27906	0.0002
Deposits does not Granger cause GDP	3.91984	0.0091
GDP does not Granger cause Financing	4.75286	0.0032
Financing does not Granger cause GDP	0.87530	0.4858

Table VI
Vector error correction model

Variables	D(GDP)	D(Deposits)	D(Financing)	D(Offices)
CointEq1	0.004900 (0.04715) [0.10393]	19.38373 (4.68429) [4.1380.]	12.15795 (10.1535) [1.19741]	-0.260609 (0.15070) [-1.72934]
D(GDP(-4))	0.375349 0.19224 [1.95254]	-41.54330 19.1000 [-2.17504]	11.46173 41.4005 [0.27685]	1.085842 0.61447 [1.76713]
D(Deposit(-4))	-0.002811 0.00172 [-1.63341]	0.227824 0.17097 [1.33252]	1.077050 0.37059 [2.90628]	0.008821 0.00550 [1.60375]
D(Financing(-4))	0.000130 0.00078 [0.16796]	0.027658 0.07716 [0.35844]	-0.213846 0.16725 [1.27857]	0.001992 0.00248 [0.80245]
D(Offices(-4))	0.032144 0.09426 [0.34103]	22.75455 9.36501 [2.42974]	19.32185 20.2992 [0.95185]	-0.060802 0.30128 [-0.20181]

Notes: R-squared = 0.714741; Adj. R-squared = 0.605671

Line 1 = coefficient, line 2 = st. error, line 3 = t value

Figure 1
Impulse Response

Response to Cholesky One S.D. (d.f. adjusted) Innovations

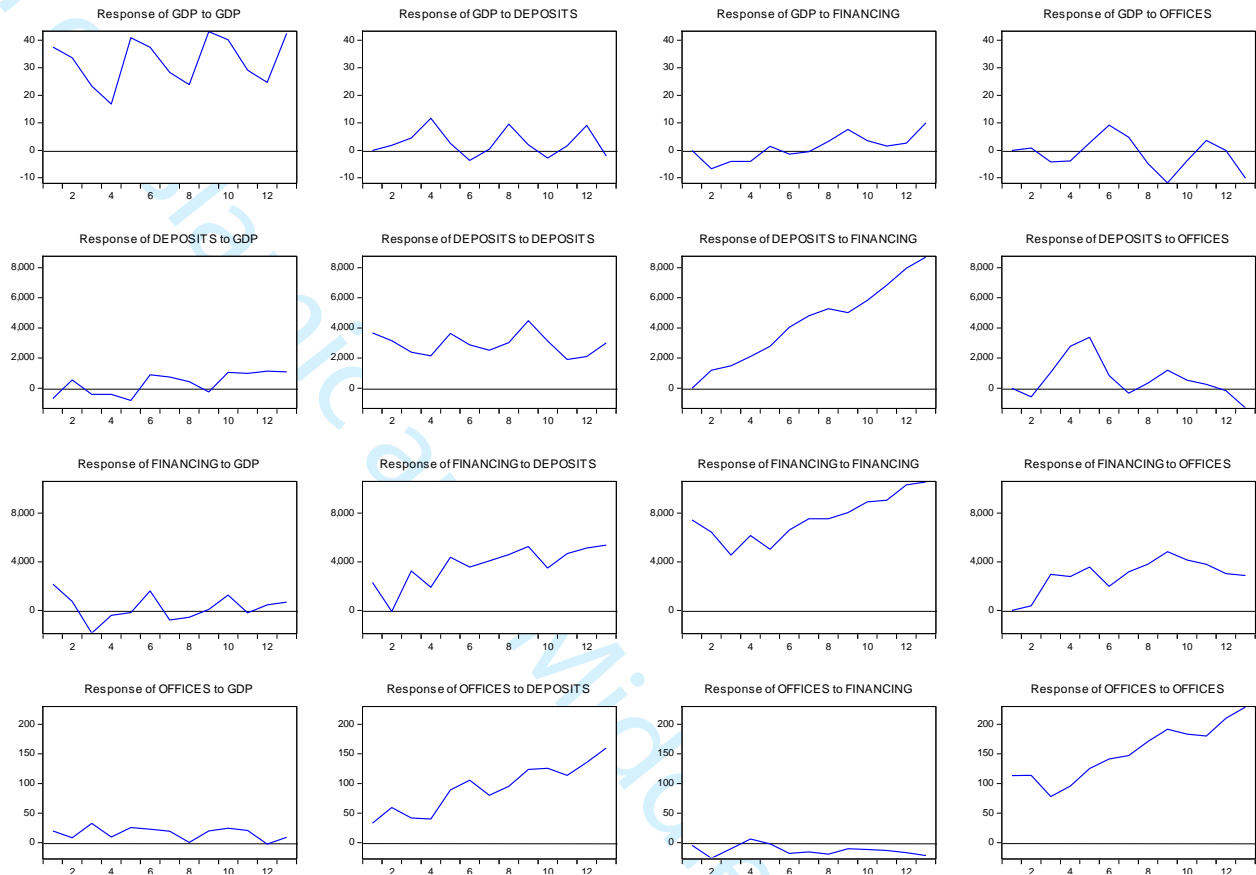
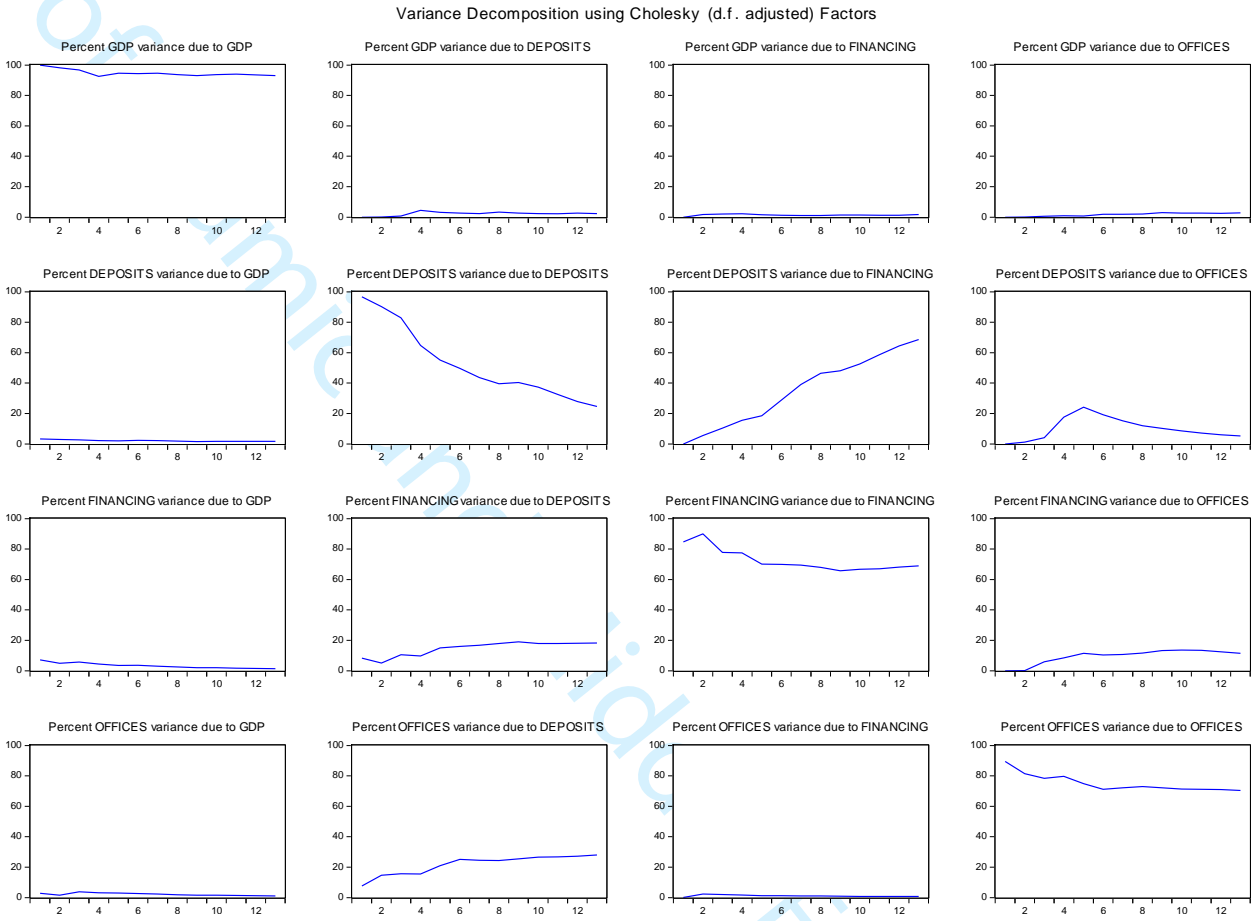


Figure 2
Variance Decomposition analysis



**6. Bukti konfirmasi review dan hasil review
Ketiga
(12 April 2020)**

Preview (IMEFM-02-2018-0071.R1)

From: mhassan@uno.edu

To: Junaidi@stiem.ac.id, suhardi@stiem.ac.id

CC:

Subject: International Journal of Islamic and Middle Eastern Finance and Management - Decision on Manuscript ID IMEFM-02-2018-0071.R2

Body: 30-Mar-2020

Dear Dr. Junaidi:

Manuscript ID IMEFM-02-2018-0071.R2 entitled "Islamic bank contribution to Indonesian economic growth" which you submitted to the International Journal of Islamic and Middle Eastern Finance and Management, has been reviewed. The comments of the reviewer(s) are included at the bottom of this letter.

The reviewer(s) have recommended major revisions to the submitted manuscript. Therefore, I invite you to respond to the reviewer(s)' comments and revise your manuscript. Please revise your paper in light of the referee comments and include a few similar published in IMEFM and JECD in your revised version. Also have the paper copy-edited by an English Editor for grammar and clarity.

To revise your manuscript, log into <https://mc.manuscriptcentral.com/imefm> and enter your Author Centre, where you will find your manuscript title listed under "Manuscripts with Decisions." Under "Actions," click on "Create a Revision." Your manuscript number has been appended to denote a revision.

You will be unable to make your revisions on the originally submitted version of the manuscript. Instead, revise your manuscript using a word processing program and save it on your computer. Please also highlight the changes to your manuscript within the document by using the track changes mode in MS Word or by using bold or coloured text.

Once the revised manuscript is prepared, you can upload it and submit it through your Author Centre. The deadline for uploading a revised manuscript is 29-Jun-2020 from receiving this email. If it is not possible for you to resubmit your revision within this timeframe, we may have to consider your paper as a new submission.

When submitting your revised manuscript, you will be able to respond to the comments made by the reviewer(s) in the space provided. You can use this space to document any changes you make to the original manuscript. In order to expedite the processing of the revised manuscript, please be as specific as possible in your response to the reviewer(s).

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Once again, thank you for submitting your manuscript to the International Journal of Islamic and Middle Eastern Finance and Management and I look forward to receiving your revision.

Sincerely,
Prof. M. Kabir Hassan
Editor, International Journal of Islamic and Middle Eastern Finance and Management

mhassan@uno.edu

Reviewer(s)' Comments to Author:

Reviewer: 1

Comments:

Dear author,

Please read the paper first, check the repeated words, send to a professional proof reader who has idea to the related field. and provide justification and evidence of your facts those provided as assumptions. justification on methodology. for example; why is it adequate for this study. and how have you chosen variables? justification or evidence. improve suggestions and implications. also compare the results with Muslim majority countries and non-Muslim countries. Good Luck.

Additional Questions:

1. Originality: Does the paper contain new and significant information adequate to justify publication?: the revised paper has included several new information related to the field. But many several sources are missing for provided information.

2. Relationship to Literature: Does the paper demonstrate an adequate understanding of the relevant literature in the field and cite an appropriate range of literature sources? Is any significant work ignored?: the evidence should be state to the point whereas this paper has presented some unnecessary information which is not relevant. Furthermore, there are many assumptions were provided without citations. the literature were presented as in thesis format. the literature did not include any clarification or justification over variables those used for the study. in conclusion, the literature reviews were presented considered as poor.

3. Methodology: Is the paper's argument built on an appropriate base of theory, concepts, or other ideas? Has the research or equivalent intellectual work on which the paper is based been well designed? Are the methods employed appropriate?: the authors may justified clearly with relevant evidences or could presented a table with re;relevant data, methodologies, variables and findings gap. then it could be easy to find the appropriate or adequate methodology.

4. Results: Are results presented clearly and analysed appropriately? Do the conclusions adequately tie together the other elements of the paper?: Results were provided step by step and discussions were quite okay. but the contents look messy and all table were provided in appendix but hasn't mention in text. one paragraph was repeated from discussion to conclusion.

5. Implications for research, practice and/or society: Does the paper identify clearly any implications for research, practice and/or society? Does the paper bridge the gap between theory and practice? How can the research be used in practice (economic and commercial impact), in teaching, to influence public policy, in research (contributing to the body of knowledge)? What is the impact upon society (influencing public attitudes, affecting quality of life)? Are these implications consistent with the findings and conclusions of the paper?: i think there are many implications could be provided based on practical example. however, still poor implications. suggestions for future studies could be enlighten. overall, i am not satisfied with contents and points.

6. Quality of Communication: Does the paper clearly express its case, measured against the technical language of the field and the expected knowledge of the journal's readership? Has attention been paid to the clarity of expression and readability, such as sentence structure, jargon use, acronyms, etc.: I think, the quality of language and sentence structure is very poor. it should be send to a professional proof reader. the authors have not read the properly before submission, there were repeated words, repeated paragraph and sentence structure is poor.

Reviewer: 2

Comments:

I still find some lacking in the flow at the Introduction part. For example, the author explained the population of Muslim countries in the second para. Then suddenly the author started discussing the economic growth of Indonesia in the third para. Same problem exists in the literature review part as I mentioned earlier.

Additional Questions:

1. Originality: Does the paper contain new and significant information adequate to justify publication?: the issue of the paper is vital

2. Relationship to Literature: Does the paper demonstrate an adequate understanding of the relevant literature in the field and cite an appropriate range of literature sources? Is any significant work ignored?: There is a lack of flow in the literature review. for example: in page 8 , para 2, author/s suddenly explaining the Islamic finance status and size in Indonesia after citing prior studies. It has no linkages with the previous paragraph.

3. Methodology: Is the paper's argument built on an appropriate base of theory, concepts, or other ideas? Has the research or equivalent intellectual work on which the paper is based been well designed? Are the methods employed appropriate?: okay

4. Results: Are results presented clearly and analysed appropriately? Do the conclusions adequately tie together the other elements of the paper?: In the result part, only statistical interpretation is visible. Very little attempts on economic interpretation of the findings is there in the draft.

5. Implications for research, practice and/or society: Does the paper identify clearly any implications for research, practice and/or society? Does the paper bridge the gap between theory and practice? How can the research be used in practice (economic and commercial impact), in teaching, to influence public policy, in research (contributing to the body of knowledge)? What is the impact upon society (influencing public attitudes, affecting quality of life)? Are these implications consistent with the findings and conclusions of the paper?: Discussion should be extended.

6. Quality of Communication: Does the paper clearly express its case, measured against the technical language of the field and the expected knowledge of the journal's readership? Has attention been paid to the clarity of expression and readability, such as sentence structure, jargon use, acronyms, etc.: okay

Date Sent: 30-Mar-2020

**7. Bukti konfirmasi submit revisi ketiga,
respon terhadap komentar reviewer dan
artikel yang disubmit
(12 April 2020)**

International Journal of Islamic and Middle Eastern Finance and Management - IMEFM-02-2018-0071.R2

Inbox



International Journal of Islamic and Middle Eastern Finance and Management <Thehalof@manuscriptcentral.com>
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12-Apr-2020

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CC:
Subject: International Journal of Islamic and Middle Eastern Finance and Management - Decision on Manuscript ID IMEFM-02-2018-0071.R3
Body: 29-Apr-2020

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Sincerely,
Prof. M. Kabir Hassan
Editor, International Journal of Islamic and Middle Eastern Finance and Management
mhassan@uno.edu

Date Sent: 29-Apr-2020

**9. Bukti konfirmasi bahwa artikel sudah
dipublish secara online
(23 Juni 2020)**

Islamic bank contribution to Indonesian economic growth

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Abstract

Purpose

This paper aims to examine the short run and long run of Indonesia Islamic bank (IIB) contribution to economic growth over the periods 2009: Q1 – 2019: Q4. IIB is considered which supported by the largest Muslim population in the world. Deposits, financing and offices are proxy to highlight the relationship between Islamic banks and Indonesia's economic growth.

Design/methodology/approach

Through cointegration analysis, autoregressive distributed lag (ARDL), vector error correction model (VECM), variance decompositions (VDCs) and impulse response functions (IRFs), this study investigates the Islamic bank and economic growth nexus.

Findings

A significant relationship in the short-run and long-run between IIB deposits and offices and economic growth. There is evidence of a bidirectional relationship between the Islamic bank and economic growth.

Social implications

In spite of their market share less than a conventional bank. The result proved that IB a prosperous sector and has a contribution to economic growth. This address regulator must have a dedicated unit to handle IIB legal cases should it go to the court for adjudication.

Originality/value

The study role of Islamic banking contribution to economic growth in the context of Indonesia is limited. This paper is the first study that examines empirically the effect of Indonesian Islamic banks on economic growth measured by the amount of gross domestic product (GDP), financing, offices and deposits.

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Islamic bank contribution to Indonesian economic growth

Islamic bank
contribution

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Abstract

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Keywords Indonesia, Islamic banking

Paper type Research paper



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1. Introduction

Islamic banking is one of the fastest-growing aspects of financial institutions across the world. Their origin can be traced back to 1963 when they were first opened in Egypt for the first time (Tabash and Dhankar, 2014a). Islamic banks emerged and were mainstreamed within the global system, which directly impacts the real economy (S and P, 2017). The growth of Islamic banks is supported by the Muslim population, which is expected to be more than 25% of the world population by 2030. By this period, it is likely to increase to 6.2 million from 2.6 million in the USA. In several European countries it might increase by more than 10% of the total residents (Solomon, 2018). Therefore, the Muslim population plays a significant role in the development of Islamic financial institutions (Hassan *et al.*, 2011; Lebdaoui and Wild, 2016).

The seven countries with Muslim dominated populations can become the largest economies worldwide, including Bangladesh, Egypt, Indonesia, Iran, Nigeria, Pakistan and Turkey (Muhamad and Mizerski, 2013). Indonesia, with the largest Muslim population in the world, has a large Islamic finance market, which ranks fourth after Iran, Malaysia and Saudi in the international Islamic finance industry (Mohd. Yusof and Bahlous, 2013). Starting with only two Islamic banks in 1999, it currently has 14 full edged Islamic banks, 19 Islamic windows and 164 Islamic rural banks (OJK, 2019). For this reason, it is vital to examine the contribution of Indonesia Islamic bank (IIB) on economic growth. However, the theoretical and empirical literature shows the relationship between Islamic banking and economic growth is limited (Boukhatem and Ben Moussa, 2017), especially their financial intermediation role context (Kassim, 2016).

According to previous studies, Islamic banks have positive impacts on economic growth. For instance, it has an economic contribution through the transmission of deposit to financing and investment in Bangladesh (Chowdhury *et al.*, 2018), GCC and East Asia countries (Grassa and Gazdar, 2014; Mohd. Yusof and Bahlous, 2013), Indonesia (Abduh and Omar, 2012), Malaysia (Abd. Majid and Kassim, 2015; Furqani and Mulyany, 2009; Kassim, 2016), Middle-East and North Africa (MENA) (Goaied and Sassi, 2010), OIC countries (Farahani and Dastan, 2013; Imam and Kpodar, 2016; Kim *et al.*, 2018), Saudi Arabia (Jouini, 2016), Southeast Asia (Lebdaoui and Wild, 2016), Sub-Saharan Africa and East Asia and Pacific (Boukhatem and Ben Moussa, 2017), 22 Muslim countries (Abedifar *et al.*, 2016). Furthermore, the number of branches support banking intermediation role and economic growth (Bernini and Brighi, 2017; Jayaratne and Strahan, 1996).

The results of prior studies remain inconclusive because some show that Islamic banking does not significantly affect on economic development in Bangladesh (Hye and Islam, 2012), Malaysian (Hachica and Amar, 2015), MENA countries (Kar *et al.*, 2011) and Turkey (Yüksel and Canöz, 2017) and UAE (Zarrouk *et al.*, 2017). In regions with a dual banking system, Islamic bank has experienced less participation in the structuring of production (Boukhatem and Ben Moussa, 2017). This study focuses on the economic contribution of Islamic banking in countries with a significant percentage of the Muslim population and the dual banking system. It supplements previous studies with contributions to the economic literature. Specifically, it provides insight into understanding the effect of IIB on economic growth with combine financial and non-financial indicators.

This paper consists of six sections, each handling different aspects. Section 1 discusses the introduction, in which the background and rationale of the study are outlined. Section 2 covers the review of literature, specifically, the impact of Islamic banks and financial development on economic growth. It also captures the background of Islamic banking in Indonesia. Section 3 discusses the detail of the data and research methodology used.

Section 4 reports the findings and discussion. Section 5 outlines the conclusion and finally, Section 6 covers the direction and any suggestions for future research.

2. Literature review

Islamic banking has been considered as an alternative solution to the conventional banking system in terms of allocating, investing and mobilizing funds to firms. It enhances financing in the real economy as the leading investment depositors and income distributors (Kassim, 2016). There are four important roles of an Islamic bank as inter-mediation finance to economic growth. This includes contributing to financing morally acceptable projects, encouraging lending, promoting financial stability and stimulating saving (Imam and Kpodar, 2016). It is supported by Islamic banking-sharing instruments, which are predominantly equity-based and directly pursue the bi-directional causal relationship with economic growth (Chowdhury *et al.*, 2018; Kassim, 2016). Islamic banks promote economic activities, including offering capital ventures in the real economy, which is more efficient compared to pure lending. Furthermore, they have a more positive impact on economic growth. Essentially, five approaches were applied in examining the causal relationship studies between Islamic banking and economic growth in previous studies.

The first approach is supply-leading, where an Islamic bank fosters economic growth as a productive input (Samargandi *et al.*, 2014). This approach has been examined by several recent studies. Abd. Majid and Kassim (2015) and Kassim (2016) focused on the role of Islamic banking and financial institutions (IBFIs) on economic growth in Malaysia from 1997 to 2013. They used autoregressive distributed lag (ARDL), vector error correction model (VECM) and variance decompositions (VDCs). These studies established that the positive transmission of total deposits (TD) to gross domestic product (GDP) is significantly influenced by intermediation rather than the efficient resource allocation of Islamic banks. Similarly, Hachica and Amar (2015) examined the nexus of Malaysia Islamic banks on economic growth quarterly from 2001 to 2011. The indicator "PRIVATE" represented the total Islamic bank financing, while the ratios "PRIVIS" and "INVIS" were measured by the GDP and gross fixed capital formation (GFCF). In the long run, the impact of Islamic bank finance on economic growth was less important than in the short-run.

According to Ali and Azmi (2017), in OIC countries from 2007-2013, Islamic banks positively impacted economic growth. Similarly, Lebdaoui and Wild (2016) established that Islamic bank assets and deposits in the long-run have positively influenced economic growth in Southeast Asia from 2000 to 2012. The large size of Islamic banking was associated with higher economic growth toward Sharī'ah-compliant in mobilizing resources to the financial sector. Grassa and Gazdar (2014) concluded that in Middle-East countries Islamic deposits positively influence economic growth 1996-2001. Similarly, from 2000-2014 in MENA (Boukhatem and Ben Moussa, 2017) and 22 Muslim countries in 1999-2011, Islamic banks as financial intermediaries positively impacted economic growth (Abedifar *et al.*, 2016). Using annual data from 52 countries from 1990-2010 shows smaller Islamic banking facilitates economic growth through capital accumulation, financing and better access to deposits (Imam and Kpodar, 2016).

The second approach is demand-following, which means that financial development follows economic growth. An expansion of the financial system is increased following real economic growth (Kar *et al.*, 2011). Hassan *et al.* (2011) established that there is a one-way causality from growth to finance for the two poorest regions such as Sub-Saharan Africa and East Asia and Pacific. Furqani and Mulyani (2009) examined the relationship between Islamic banking and economic growth in Malaysia for the period 1997 to 2005 using the cointegration test and VECM. The study established that in the short-run, Islamic banking

led to fixed investment. In the long-run, there is a bidirectional relationship between Islamic banking and fixed investment. Also, there is evidence supporting demand following GDP and Islamic banking, where increases in GDP causes Islamic banking to develop and not vice versa.

The third approach relates to bidirectional causality, implying a mutual or two-way causal relationship between an Islamic bank and economic growth. This hypothesis has been approved by several previous studies. In developing countries, specifically low and middle-income classification, a positive relationship between financial and economic growth and vice versa occurred in most regions during 1973-2008 (Hassan *et al.*, 2011). Similarly, Jouini (2016) established that the evolution of GDP and savings from 1980 to 2012 had a cointegration between the Islamic bank savings and economic growth in Saudi Arabia. The study suggested that the authorities need to formulate policies that promote economic growth and savings to increase their performances. Similarly, in Qatar and UAE during the periods 1990-2010, Islamic banks' financing and economic growth effectively worked together in 1990-2010 (Tabash and Dhankar, 2014a, 2014b). Using quarterly data from 2003 to 2010, the financing of Islamic banking has a bi-directional relationship with economic growth in Indonesia (Abduh and Omar, 2012). This means Islamic banks in Indonesia, UAE and Qatar have proven to be effective financial intermediaries in the transmission of deposits to productive sectors.

Farahani and Dastan (2013) used quarterly data of 2000-2010 to validate the relationship between Islamic banks and economic growth in OIC countries. The study used the bound testing approach of cointegration, VECM, ARDL and vector autoregressive model (VAR). The results showed that both in the short and long-run, Islamic banks have positive effects on economic growth and vice versa. Similarly, using panel data for the period 1980-2007, Kar *et al.* (2011) concluded that there is a bi-direction relationship between financial development and economic growth in MENA countries. This implies that financial and real sectors often interrelate.

The fourth approach is no causal relationship between an Islamic bank and economic growth. According to Zarrouk *et al.* (2017), there was no causality direction between Islamic financial sector development and economic growth in UAE during 1990-2012. This is because there was no financial development in the UAE. In general, Islamic finance depends largely on economic growth. The empirical study in Turkey between 2005 and 2016 shows that Islamic banks do not have a significant effect on economic growth (Yüksel and Canöz, 2017). This is attributed to the small Islamic banking in the country. Therefore, Islamic banking in Turkey should be developed to contribute to GDP growth and industrial development.

The fifth approach is a negative relationship between Islamic financial development and economic growth. Hye and Islam (2012) established that financial development hurts economic growth in Bangladesh. The study recommended the formulation of effective financial sector policies to promote economic growth. Similarly, in Nigeria, financial development negatively impacted economic growth between 1960 and 2010 (Adeniyi *et al.*, 2015). Narayan and Narayan (2013) examined the impact of the financial sector development on economic growth for a panel of 65 developing countries. The study concluded that there is a negative relationship between bank financing and economic growth in MENA countries. Samargandi *et al.* (2014) reviewed the relationship between financial sector development and economic growth in Saudi Arabia from 1968-2010. Using the ARDL and bounds test technique, the study established that financial development hurts economic growth.

There are varied results due to the economic conditions in different countries that differ due to the banking system, financial market, institutional quality, level of socio-economic

development, the methodology used and period analyzed. Moreover, previous studies had various limitations, including adopting total financing (TF) as a proxy instead of the size of the Islamic bank. They also applied a direct method to validate the relationship between Islamic bank financing and economic growth without involving other growth determining factors such as branches, deposits and financing simultaneously. Undeniably, this may have affected the robustness of their results. Various useful indicators can be used to estimate the ability of Islamic banks to mobilize investment and saving (Imam and Kpodar, 2016; Jayaratne and Strahan, 1996). For instance, in the Italy and USA, the bank size, which is measured by the number of branches, positively bank intermediation. It is the main financial sector reform that affects economic growth. Furthermore, the bank's size improves efficiency, as larger banking benefits from the wide branch Bermini and Brighi (2017) and Jayaratne and Strahan (1996).

This study adds to the existing literature in several ways by linking deposits, financing, the number of IIB offices and other essential variables to economic growth. It helps solve the problem of data unavailability characterizing developing countries. Compared to previous studies on growth-finance nexus in the countries with the full Islamic system, studies on countries with dual banking systems such as Indonesia are still considered not comprehensive to predict economic conditions. A few studies on the dual banking systems are worth highlighting. However, the major goal of this work is to assess Islamic bank contribution to economic growth in Indonesia.

The choice to study the case of Indonesia was motivated by three main reasons. First, Indonesia has been one of the first countries to have made efforts to reform its financial systems to be integrated into one regulation to manage conventional and Islamic banks. Second, relative to other countries with integrated Islamic finance, Indonesia has a powerful system and potential for growth in Islamic finance institutions. Lastly, IIB assets and offices are growing rapidly with conventional banks as shown in Table 1. However, according to the central bureau of statistics, Indonesian faced relatively low economic growth between 2009 and 2019, with just over 5% (BPS, 2019). There is a need for an in-depth study of the relationship between banking systems and economic growth. Therefore, this research provides empirical evidence of the contribution of Islamic banking on Indonesia's economic growth.

3. Data and research method

This study empirically examines the contribution of the IIB to economic growth. It uses quarterly time series data from 2009 to 2019 and refers to Imam and Kpodar (2016) and Levine *et al.* (2000) in explaining economic growth with a set of control variables. Islamic banking development is measured by the finance extended to the real economy, which is divided by the nominal GDP. Although this indicator gives an idea of the size of the Islamic banking sector, it is reasonable to assume that the larger the sector, the better it performs. However, this is a common hypothesis made for conventional and Islamic banking in past studies. The data are collected from the Indonesian central bureau of Statistics (BPS) and quarterly Islamic statistical bulletin of bank Indonesia from financial services authority (OJK).

GDP is a common proxy for representing the income level of a particular country within a certain time. Study about finance-growth nexus often use GDP as the principal variable reflecting economic growth. The number of deposits, financing and offices are used as a representation of IIB intermediation performance, while economic indicators include the level of business activity during an accounting period. Therefore, the models contain four variables, including TD, TF, IBO and GDP. The study focuses on the following one model:

Table 1.
IIB data and
indicators

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Islamic banks											
SCB	6	11	11	11	11	12	12	13	13	14	14
SBU	25	23	24	24	23	23	22	22	21	20	19
SRB	139	150	155	158	163	163	163	166	167	165	164
Offices	1,223	2,101	2,101	2,663	2,990	2,922	2,747	2,654	2,664	2,724	2,917
Assets*	94,324	148,98	186,736	199,71	248,10	272,34	304,00	365,66	424,18	489,69	538,322
Financing*	54,334	105,33	118,949	151,06	188,56	200,18	219,76	255,76	286,92	329,74	366,380
Deposits*	58,768	117,51	126,699	150,46	187,20	221,89	235,98	285,16	341,71	379,97	425,290
Employees	15,443	20,264	27,660	31,578	43,054	50,522	60,918	59,969	60,365	59,389	61,460

Sources: Indonesian financial services authority (OJK), SCB = Shari'ah commerce banks, SBU = Shari'ah business units; SRB = Shari'ah rural banks; * in trillion rupiahs (IDR)

$$GDP = f(TD, TF, IBO) \tag{1}$$

Islamic bank contribution

where:

GDP = Gross domestic product;

TD = Total deposit;

TF = Total financing; and

IBO = Islamic bank offices.

The data required are collected to provide empirical evidence on the long-run integration between IIB and economic growth, as well as to determine the dynamic causal link between IIB deposits, financing, offices and economic growth (GDP). The unit root test for all variables is carried out using augmented Dickey–Fuller (ADF) and Phillips–Perron (PP). The power of the unit root tests is typically very low, although there is a switch in the distribution function of the test statistics, obviating uncertainty (Narayan, 2004). Table 2 shows the summary of the unit root test, which leads to the mixture of I(0) and I(1) of underlying regressors. Therefore, the ARDL testing could be effectively conducted. Its model is divided into the following:

$$\begin{aligned} \Delta GDP_t = & \alpha_1 + \sum_{i=1}^k \beta_{1-i} \Delta GDP_{t-1} + \sum_{i=1}^k \theta_{1i} \Delta TD_{t-1} + \sum_{i=1}^k \theta_{1i} \Delta TF_{t-1} \\ & + \sum_{i=1}^k \theta_{1i} \Delta IBO_{t-1} + \varepsilon_t \end{aligned}$$

Once the same order of integration at the first-difference level was confirmed, the VECM estimation was used to empirically examine the short and long-run causal relationships between variables. The ARDL bounds testing approach was used to examine this relationship, though it was initially introduced by Pesaran *et al.* (2001). This approach is formed by an autoregressive part plus a regression with distributed optimal lags, which is one and uses the akaike information criteria (AIC) in this study. The sample size is 44, and therefore, this method can be effectively used. The ARDL approach can be applied regardless of the stationary properties of the variables. It allows for inferences on long-run estimates and strengthens the results for a smaller sample size of cointegration analysis.

The presence of cointegration suggests that the variables have long-term relationships, even though they may drift apart in the short-run. Consequently, there must be at least one direction of causation in the Granger sense, either unidirectional or bidirectional causality. However, the asymptotic distribution of the *F*-statistic is not standard for the bound test. Therefore, the computed *F*-statistic is evaluated using the critical values established by Pesaran *et al.* (2001). These critical values are of two sets, the lower bound, which assumes all the variables to be I(0) and the upper bound, which considers all the variables to be I(1).

Levels Variable	First difference			
	ADF	PP	ADF	PP
<i>TD</i>	-2.116311	-2.116311	-6.712833***	-6.723387***
<i>TF</i>	-1.414281	-1.613531	-5.513330***	-5.523142***
<i>IBO</i>	-1.944028	-1.348207	-4.388365***	-4.324502***
<i>GDP</i>	-4.590910***	-4.219206***	-8.369861***	-11.98563***

Notes: ***Denotes significance at the 1% level; the lag lengths included in the models are based on the AIC; the above tests of ADF and PP are based on a model with constant and trend

Table 2.
ADF unit root test

Following [Engle and Granger \(1987\)](#), to determine the dynamic causal link between Islamic finance and economic growth, the error correction vector model (VECM) should be pursued.

This study also generates a VDCs approach to explore the dynamic interaction between an Islamic bank and the Indonesian GDP. Consequently, the out-of-sample causality between the variables in the VAR system can be determined. The method measures the percentage of the forecast error variance of the variable explained by other aspects. Precisely, it indicates the relative impact that one variable has on another. Also, it provides information on how a variable of interest responds to shocks or innovations in other variables ([Abd. Majid and Kassim, 2015](#)).

Although VDCs provide information on the relative strength of each random innovation in selected variables to GDP, the impulse response functions (IRFs) are further examined to trace the direction of transmission of Islamic banking development to economic growth. This method is also used to assess the responses of GDP to the shocks of IIB over 11 years. Primarily, IRFs does not require the orthogonalization of shocks. It is also invariant to the ordering of the selected variables. Therefore, to stimulate the equations, the impulse response function proposed by [Pesaran and Shin \(1998\)](#) is used.

4. Results and discussion

From [Table 2](#), the ADF and PP test shows that all series are non-stationary at a level and stationary at first difference. This means that all variables of the same order integrated and the time series data cannot be rejected on varying levels in a logarithm form. For this reason, they are integrated into order one I(1). The cointegration analysis is conducted, as they are all integrated in the same order as required. This is a precondition for cointegration to the ARDL bounds testing.

The bounds test approach to co-integration is adopted, as shown in [Table 3](#), for all models. The results of *F*-statistics in the lag length 1 are higher than 3.02, the upper critical bounds at 10% and level of significance at 4.0781, 3.2753 and 3.0864, respectively. Consequently, there is strong statistical evidence of the existence of a long-run relationship between the variables in this study. This suggests that Islamic banks' deposits, financing and offices in Indonesia have long-run equilibrium relationships with the real economy. The cointegration equations show that all variables have long-run equilibriums with tendencies to move together.

According to [Engle and Granger \(1987\)](#), in case the variables are co-integrated, a VECM or a level VAR can be used. However, using VAR in level may be spurious and misleading, suppose the log level variables are non-stationary. The findings that the variables are non-stationary and co-integrated suggest the use of the VECM. In case the *F*-statistic exceeds the upper bound level, the *H0* is rejected, showing the existence of cointegration. In contrast, in case the *F*-statistic falls below the bound level, the *H0* cannot be rejected, showing no cointegration exists.

Level of significance (%)	I(0)	I(1)	Variables	<i>F</i> -value
1	4.94	5.58	<i>Deposit</i>	4.0781*
5	3.62	4.16	<i>Financing</i>	3.2753*
10	3.02	3.51	<i>Offices</i>	3.0864*

Table 3.
Bounds *F*-test
statistic for a long-
run relationship

Notes: The relevant critical value bounds are taken from [Narayan \(2005\)](#); and [Pesaran et al. \(2001\)](#). * Denote that *F*-statistics significant at the 10% level and k = 1

In the second stage, the long-run ARDL [1, 1, 1, 0] model estimates are selected based on the AIC criteria. The computed *F*-statistics for each variable is reported in Table 4 along with the critical values. The test outcome of the lag length 1 and significance levels in the 1% was found. Based on the findings of the ARDL method in Table 5, Islamic banking TDs, financing and the number of offices have positive contributions to the Indonesian economy. Although the market share of Islamic banking was approximately 6% at the end of 2019 (OJK, 2019), the distinct nature of its financing, which is interest-free, is documented to boost the real sector. Moreover, less volatility, either during the normal or crisis period, is also documented to promote the economic growth of the country. This means to improve the economic growth of the country, there is a need to further enhance efficiency and develop the Islamic banking industry.

Once the long-run association between economic growth and measures of IIB's development are explored, the Granger causality test is tested using the first-differenced variables based on the VECM. This enables the distinction between the short- and long-run causalities. The documented cointegration among the variables suggests a long-run association. Although it implies causality, it does not reveal the directions of causation among them. Table 5 shows the Granger causalities between the focus variables, specifically economic growth (GDP) and indicators for IIB development (i.e. TD, TF and IBO).

Table 5 shows the findings of the Granger causality between the IBFIs and economic growth based on VECM. In this analysis, the short and long-run causality is depicted by the *F*-statistics and *t*-statistics, respectively. It is vital to note that the variables are significant at least at 10% to Indonesia's economic growth and vice versa. This confirms the existence of the long-run relationship between economic growth and the IIB's development as shown in the earlier ARDL results. The coefficients value indicates that deviations from the long-run equilibrium require short-run adjustments to restore. Technically, the significant value implies that any deviations from the long-run equilibrium relationships in the economy are mainly caused by the changes in GDP and IIB. These variables bear the brunt of the short-run adjustments to the long-run equilibrium.

Regressor	Coefficients	<i>t</i> -statistics
Deposits	0.0095***	5.0960
Financing	-0.0123***	-5.2999
Offices	0.2459***	0.0103

Table 4.
ARDL Estimate of a long-run relationship

Note: ***Statistical significance at 1% level, ARDL (1, 1, 1, 0)

Financial Indicators	IIB-led growth		Growth-led IIB	
	Short-run	<i>Long run</i> _{<i>t</i>-1}	Short-run	<i>Long run</i> _{<i>t</i>-1}
TDs	3.7747 (0.059)**	-0.0118 (0.000)***	8.965 (0.005)***	-0.0078 (0.003)***
TF	0.2194 (0.642)	0.01191 (0.001)***	3.218 (0.080)*	0.0098 (0.004)***
Offices	3.0999 (0.996)	-0.5045 (0.058)**	0.475 (0.495)	0.0054 (0.166)

Table 5.
Granger causality based on VECM

Note: ***, **, and *denote significance at the 10, 5 and 1 per cent levels, respectively

The results show that IIB has a significant influenced GDP and vice versa, as opposed to IBO. This is contrary to a previous study, which showed that Islamic banks have more significant impacts in the short run than in the long run (Hachica and Amar, 2015). However, it supports prior studies on bidirectional causality between Islamic banks and economic growth (Abduh and Omar, 2012; Farahani and Dastan, 2013; Kar *et al.*, 2011). The study also showed that TD and GDP in the short and long run can run together. This is in line with Jouini (2016), which showed that Islamic bank deposits had a positive impact on economic growth in Saudi Arabia. However, it is contrary to the finance-led hypothesis or supply-leading view of Islamic bank deposits to GDP (Abd. Majid and Kassim, 2015; Kassim, 2016).

From the lagged dynamic terms, the long-run changes in the IIB are in part responsible for future changes in Indonesia's economic growth. Besides, each variable has a crucial impact on growth through IIB's financial intermediation role. This finding confirms the positive long-run stable association between economic growth and banking' development (Bernini and Brighi, 2017; Jayaratne and Strahan, 1996; Levine *et al.*, 2000). Table 1 shows that TD and financing and the number of offices of the IIB are moving together in the long run. Islamic banking encourages the development of the real economic sector by increasing financing and the number of offices, which utilize funds more efficiently and productively. IIB financing facilitates access to financial resources to stimulate Indonesia's economic growth. Furthermore, the quality of the contribution of IIB is improved by direct investment inflow. It is also argued that deposit, financing and the offices of IIB provided to the private and public sectors enhance real output.

The implication of the finance-driven growth causality as indicated by the three indicators for the IIB shows that IBFs are probably effective in channeling and transferring the financial resources between surplus and deficit units in the economy. The success of the IIBs' development to enhance economic growth can be attributed to the conducive policy environment championed by the Indonesian Government. This is meant to promote and strengthen the contribution of IIBs to economic performance.

VDCs were computed simultaneously to assess the short-run dynamics of the relationship between IIB and economic growth. This was achieved by determining the relative importance of each variable in generating fluctuations in other variables. The results of VDCs shown in Table 6 provide detailed information of the IIB deposit, financing and offices. They a significant proportion around 0%–40%, 0%–2% and 0%–13%, respectively, to the variations of Indonesian economic growth (GDP) forecast error variance.

Period	SE	Deposit	Financing	Offices	GDP
<i>VDCs of GDP</i>					
2009	66.36904 (0.059) **	0.000000	0.000000	0.000000	100.0000
2010	79.55838	2.230881	2.301467	6.325094	89.14256
2011	92.13548	16.80861	1.752384	13.93899	67.50002
2012	104.1656	28.27132	1.804531	13.77888	56.14527
2013	112.4978	30.64290	1.563673	12.75833	55.03510
2014	119.0594	31.73856	1.406942	12.73022	54.12427
2015	125.6751	34.05743	1.265701	13.19195	51.48492
2016	132.4228	36.46562	1.165964	13.29097	49.07745
2017	138.6537	37.99607	1.075831	13.17526	47.75284
2018	144.4049	39.05800	0.995204	13.13627	46.81053
2019	149.9589 (0.996)	40.09699	0.927214	13.18142 (0.495)	45.79438

Table 6.
VDCs

This finding support earlier finding of short-run dynamic causalities among the variables examined in the study.

Generally, the impulse response function processed in the Cholesky decomposition helped assess the responses of the GDP to the shocks of IIB over the 11 years. However, the result of this function depends on the ordering variables (Hassan *et al.*, 2011). As shown in Table 7, in the short run, Islamic banking sector development, except for financing, has an instantaneous significant positive correlation with the GDP during the period of study. It contributes to the changes in economic growth in the short and long run. This implies that all coefficients in the error correction model are stable over time. The estimated ARDL models are good in estimating the short and long-run relationships between the Islamic bank and Indonesia’s economic growth.

5. Conclusion

Using a series of statistical tests, this study examined the short-run and long-run relationship between IIB and economic growth from 2009:Q1 to 2019:Q4. Also, it empirically investigated the Granger causality between IIB’s development and economic growth using the ARDL and VECM. It re-examined the model in level form and generated VDCs and IRFs to further assess their relative-strength relationships to effectively conclude.

Based on the specified ARDL models, there is a bidirectional relationship between IIB deposit and economic growth in both the short and long-run. This finding is consistent with the tenets of Islamic finance, which states Islamic banking provides an efficient channel for productive resources to be transmitted for economic growth through its intermediation role. This means Islamic banking effectively facilitates the transmission of funds to the real economy. The linkage between deposits, financing and offices to economic growth is simultaneously in the long run.

The results of the VDCs and IRFs provide further support to the earlier findings. Both the TDs, financing and offices of the IIB play significant roles in explaining the variations in economic growth. There is a need to enhance the development of IBFIs to enhance economic growth.

The result implies that developing the Islamic banking and finance industry should be prioritized by policymakers in promoting economic growth. Continuously providing a conducive environment for IIB growth may facilitate economic development in the short and long run. The Indonesian Government should continue to promote Islamic banking due to its role in economic growth and resilience in crisis. This can be achieved by increasing the

Period	Deposit	Financing	Offices	GDP
IRFs of GDP:				
2009	0.000000	0.000000	0.000000	66.36904
2010	11.88295	12.06947	20.00873	35.117755
2011	35.85623	-1.756916	27.98078	9.366464
2012	40.50554	-6.858668	17.65787	19.02600
2013	28.46963	-1.447214	10.93569	29.54794
2014	24.91767	1.241475	13.77906	26.59091
2015	29.66699	-0.687007	16.70455	21.43516
2016	31.86571	-2.133827	15.71976	21.78233
2017	30.16876	-1.538133	14.22135	23.96440
2018	28.98261	-0.837105	14.36500	24.10156
2019	29.53302	-0.990552	14.99723	23.16880

Table 7.
IRFs

current asset ratio, the number of Islamic banks and the quality of the IIB. This would include measures such as further improvement of the Islamic financial infrastructure and increasing the intellectual capital of the employees in the future. Providing conducive legal regulation would also be supportive in the long-run development of the industry.

Second, as the number of Indonesia Islamic financial institutions significantly increases currently, there is a need to have sufficient skill to manage them, especially the competent Shari'ah personnel and advisers, apart from trained Islamic bankers and competent scholars. It is vital to specifically pursue and recruit potential students with specific Islamic banking and finance skills such as *Fiqh Muamallah context*. IIB intermediation leads to economic benefits and increases managers' entrepreneurial skills. It reduces agency costs, which brings a positive impact on both the economy and the development of society. However, IIB needs to adopt current financial technology to improve its products and services.

6. Limitations and direction for future research

Several areas may refine the literature in this subject, including undertaking a more robust analysis using an extended period. More detailed aspects of Islamic financing could be explored by analyzing specific financing in various economic sectors. This would allow the identification of the specific sectors contributing to the economic growth. Future research should consider combining countries that have implemented a pure Islamic and dual banking system to collect adequate data. There is also a need to use different and advanced methods such as ARCH-GARCH, ARIMA and GMM framework to determine the robustness and consistency of the results. This could, perhaps, provide a clearer perspective for the policy recommendations. This may involve examining several countries developing the Islamic banking and finance industry for comparison and more enriching policy recommendations. Future research should shed more light on this topic, especially to the causes of heterogeneity amongst countries based on size, structure and depth of different financial systems with Islamic banks around the world.

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